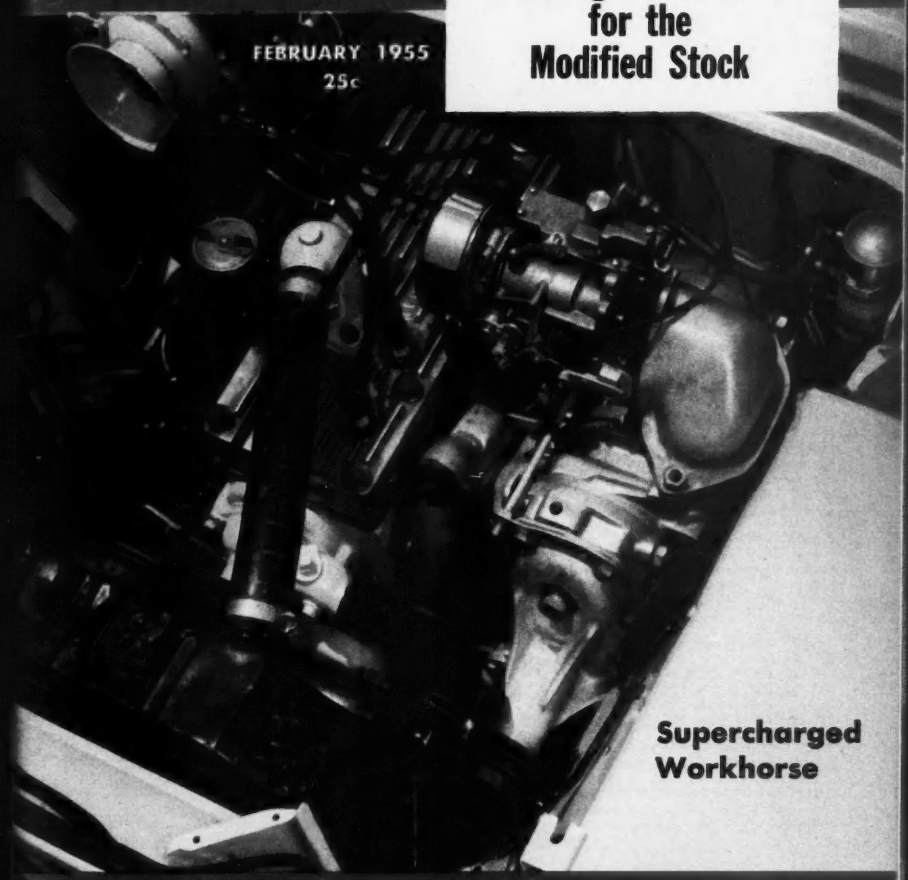
CAR CRAFT

The SHOW-HOW Magazine

CUSTOM CARS • HOT RODS

FEBRUARY 1955
25c

Building the ENGINE for the Modified Stock



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DRAG-SHIFT CONVERSIONS by Chuck Eddy

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COVER

That well-stuffed engine compartment on this month's cover is a real work-horse. It's the result of about three years' worth of experimenting by Vic Hickey and his crew at Hickey Enterprises, Los Angeles. Souped though it is, it can still do the job it was intended for and do it better than any other jeep we've ever seen. The full story is on pages 22 to 25. *Ektachrome by Bob D'Olivo*

BRIEF AND TO THE POINT:

382 Words From The Editor

WE'RE LOADED with action this month. Most important and significant is the track roadster road race covered on pages 8 through 13. The fact that it was fast has little bearing — this is taken for granted. What *was* important is the end result. Ed Lockhart, a top handler in both sprints and roadsters, made the remark that he was tired "of turning left all the time." Other drivers were heard to mutter darkly among themselves about preselect gearboxes and other items that have no business on a short track but which are right at home on a road course. This could presage a trend. It could also be just the ticket to get roadster racing out of the poorhouse. But even more important, it could be the renewal of Grand Prix type racing here.

G.P. racing *has* been tried, and at a most expensive and wonderful plant, the long gone Roosevelt Raceway on Long Island. It fell flat on its face. But, and here's the kicker, it fell not because it wasn't fast and exciting (it was) but because there was no home team to root for.

For years American drivers had been forced to make left turns and boot single-speed gearboxes. American builders had been forced to make these cars.

Consequently there were plenty of good handlers but they were also conditioned to a point where they couldn't tell a bang-shift box from a hope chest. True, the late Rex Mays, Lou Meyer and a few others managed to latch onto some obsolescent G.P. equipment. Mays, in the final, 1937, event did the almost impossible and copped third spot, but there still wasn't one home grown car and driver with a ghost of a chance. The field belonged to the Europeans. It still does.

Now, however, there's a glimmer of hope. If this thing catches on, and we most fervently hope it will, there's a fat, healthy chance that we can field a team of American drivers *and* cars in international competition.

The CRA circuit, along with other track roadster tours, has been the nursery of big time racing for years. It could be the cradle for a new crop of handlers and cars fit to grapple with the best Europe can produce. We hope so.

—john christy

THINGS TO COME

FOR THE past several months we've been giving you the dope on how to build a hard-top or modified stock. The next item coming up is for the boulevard boys. We'll take you, step-by-step, through the all-out customizing of a '52 Mercury. It'll be as complete as the stock car. Don't miss it.

The new Fords and Mercurys for '55 have put our report on the '54 mills behind the door. These new bombs are actually full-house versions of the '54 engines, *but* they're not just bored out versions. These, too, will take the souping treatment. Once again Chuck Eddy will be coming through on schedule with full details, not on just the stock engine but with the dope on what you can do to anticipate Mr. Ford in 1956. It just might be that there'll be a way to make that already obsolescent '54 surpass the '55. Watch for it.

LETTERS

PENN '40

Dear Sirs:

Enclosed you will find a picture of my 1940 Ford. I work in a store and get a chance to read all the car magazines. I think that, out of all others, your magazine is tops. Yours has the most about custom cars, in which I'm most interested.

My car has the hood and deck filled, and frenched headlights. It has duals, of course, but the engine is stock. The paint job is a Torch Red enamel.

Out of the many magazines, I'm proud to send the picture to you. Keep up the good work.

Yours truly,
Dave Sands
Reading, Pa.

It's a good start, Dave. The '40 is one of the best.—Ed.

BIG AND LITTLE FOUR

Let's have more on the Ford Industrial Four conversion, and MG transmission adapting.

How about an article on fiberglass mounting?

Yours truly,
B. M. Robbins
San Jose, Calif.

"IMPECUNIOUS"—WHASSAT?

Dear Sirs:

We like your publication very much up here particularly because you cater to impecunious types such as we. The spark of your Formula III articles has thoroughly ignited the mixture and all that is needed for a power stroke is more detailed information on construction particulars.

We realize that it is not feasible (much as we would like to see it) that you run complete instructions in your magazine but we thought that you might help us track down some printed matter on the subject.

I have a Fiat 500B chassis in my possession and am wondering about such things as frame lowering, weight distribution and rear axle cutting for sprocket drive. I am anxious to complete the car this winter in time for next summer's racing season.

We would be more than grateful for any lead you could give us in this direction.

Sincerely,
H. Shewchuk
Ontario, Canada

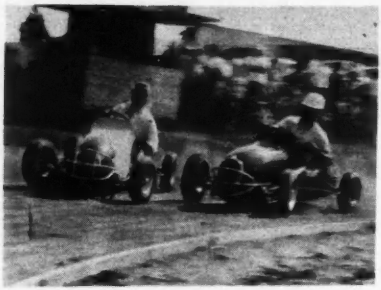
Suggest you write to Harry Morrow, 500 cc Club of America, 2708 Magnolia Blvd., Burbank, Calif.—ED.

SPORT MIDGET

Dear Sirs:

I want to compliment you on the best in your field in CAR CRAFT. I am a rather new-found reader but from now on a steady one. Yours is by far the best in the informative or do-it-yourself books and I hope it stays that way. The straight dope on welding is just what I and no doubt many others need in fooling around with racing and custom irons. Also the dope on the 500 cc jobs is something the reading and interested fans have been looking for for some time now, in particular the micro midget fans since it is so close to our type of car.

Last of all I want to ask a favor of you that I think will be of equal interest to a very good percent of your readers, that is to print some dope and news of the newest



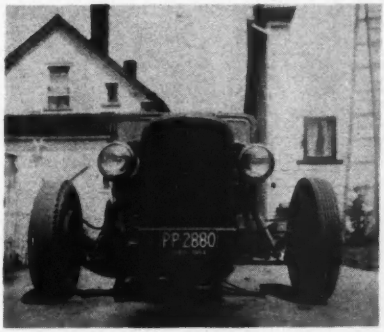
and fastest growing type of track car, the Micro Midget. Ours is a very active and fast growing club but no club gets too far if it is the only one to do that type of racing. It's the competition of racing at other tracks and clubs that makes the sport grow. It is my hope to see your book, CAR CRAFT, print articles on micro racing so other clubs that are running can see what is going on around them and set up inter-club racing and race dates. Micro racing is a sport such as sport car racing and, not like ¾ midgets, midgets or sprints, we do not race for money but as a hobby.

Sincerely,
A. C. Lieb, Jr.
Berks Micro Midget
Auto Racing Club
Showmakersville, Pa.

CHOPPED DEUCE

Dear Sirs:

After reading a few issues of CAR CRAFT magazine I've decided to send you two snapshots of my 1932 Ford coupe which was



chopped and channeled. The engine has a ¾ race cam with milled heads.

Hoping the pictures would prove interesting to your readers, I remain,

Yours truly,
Robert Sonlek
Cleveland 5, Ohio

NASH PROBLEMS

Dear Sirs:

I've been a constant reader of your CAR CRAFT magazine and have followed it with considerable interest. However I have a small problem. All the custom jobs you show are usually Fords, Chevys, Mercs and the like. Here's my problem!

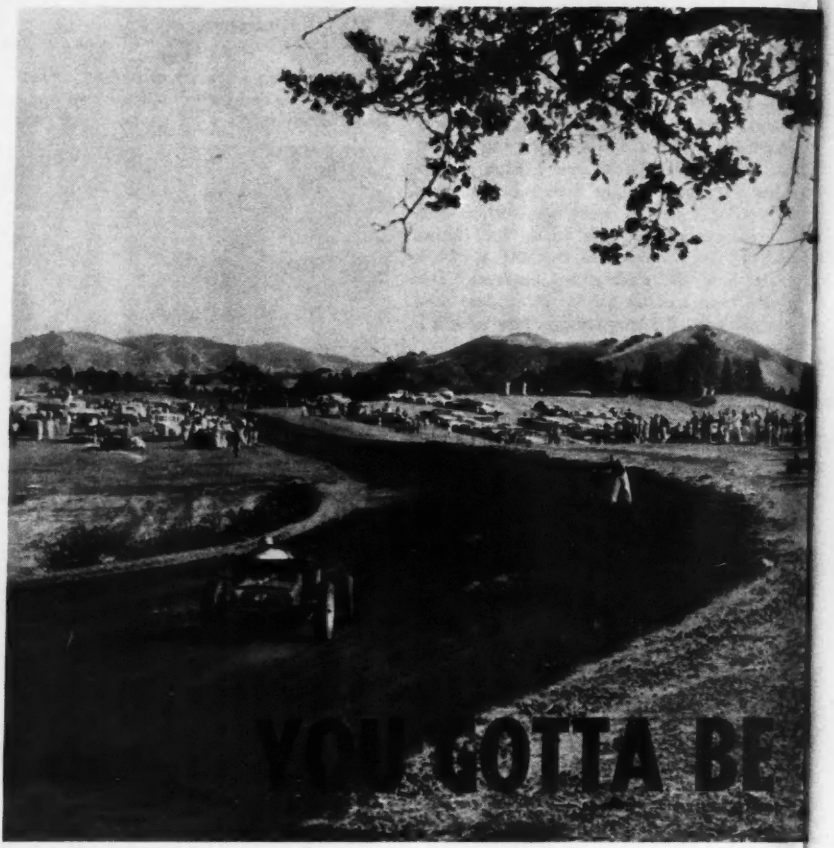
I own a Nash, a 1947 club coupe Ambassador. I'd like to do some remodeling, but could use a little help. Any suggestions would sure help. I've never seen any Nash that has been reworked. I'd like to have mine the first in your magazine.

If you could suggest anyone I could write to, I sure would appreciate it. Thanking you in advance for any help,

I remain,
William H. Clare
Denver 8, Colorado

Afraid you're on your own. The first one to do the job has a rough row to hoe. However, maybe another reader has done the job. Any takers, fellows?—ED.

(*Continued on page 59*)



OF RECENT years it has been the habit of some few racing enthusiasts to make comment that the current crop of American dirt track drivers are nothing but a bunch of spin-dizzy kids whose only attributes are a heavy right foot and an ability to make left turns. Gentle reader, if you are of that school of thought, I have news for you: You have gravel in your gourd.

It has long been said that real racing died with such names as Tetzlaff, Mulford, Lautenschlager and Resta and with such races as Elgin, Santa Monica and the old Vanderbilt Cup. The truth of the matter is that it didn't die; it merely took a long nap.

True, it began to stir a little with the advent of sports car road racing, but for *real* racing, friend, you've gotta be hungry. This kind of racing woke up with a dusty, snarling bang this fall and the guys who woke it up were the hungriest handlers in the business, the California Racing Association's hot rod jockeys who have been starving for years.

Tradition-bound to the quarter-mile dirt and asphalt tracks originally designed for midgets, track roadsters have been playing to smaller and smaller audiences despite a shot in the arm given by CRA's stumpy, hustling president, ex-driver Walt James, who

Billy Cantrell in stretched midget (left) and Johnny Pouelsen (right) take the lead.

Johnny Wood in Sunset roadster, Eli Vukovich storm hub to hub through central S turn.

HUNGRY!

Yesterday's roughest races live again as California track jobs hit the road

By John Christy

mixes up sprint cars and hot rods in a crowd-pulling and never-settled feud.

What was needed was a new gimmick. The feuds between sprints and roadsters helped, but weren't the whole answer. People just got tired of seeing cars going 'round and 'round and 'round. The answer came when Loren Tupper, owner of a small ranch just outside of Los Angeles, decided that racing could be more profitable than ranching. By the sweat of his family's collective brow and some used grading equipment, he dug a twisting, up-and-down road course around and among the hills surrounding the ranch house.

The next question was: "Who would be willing to race on two miles of clay road, unimproved except for a slight swish of oil? Perhaps Walt James's CRA drivers would like it. Perhaps they would, indeed.

Not only would CRA take a crack at it, but they would invite the San Francisco bay area handlers and some few from as far away as the Arizona-New Mexico circuits. Everything that had been racing in the sprint and

(*Continued on next page*)

Photos by D'Olivo, Rickman, Day

YOU GOTTA BE HUNGRY

continued

roadster circuits in the Southwestern section of the U.S. showed up, including one '32 Ford roadster more drag job than trackster.

Anchored down to the point of almost no wheel-travel though they were, the cars, powered with everything from full-house Chryslers to a lone French Lago Talbot engine, cranked on averages in qualifying of nearly 70 miles an hour average time for the two miles. By way of contrast let it be stated here that a 4.5 Ferrari, driven by ex-midget driver Bob Drake, turned up only 74.75 mph at the similar but *paved* Willow Springs course. The "four-five" was a car that was specifically designed for road racing and ran on a paved track. The track jobs were designed for mile, half-mile and quarter-mile dirt circular tracks; the cars had no transmissions and no clutches. As qualifying wore on, it became evident that a driver had to average 65 mph or better to make the program with the top handlers and cars turning the two miles in one minute and 41 seconds! Gentlemen, I ask you, were these guys hungry?

Fifty cars, two abreast, were shoved off in a flying start. When some of the dust cleared, Johnny Pouelsen in the Henry and James Chevron Spt., a 26 Chev-Merc roadster, and Billy Cantrell in a 105 Offy-powered sprint job led the pack by several hundred yards. These two carried on a duel in the dust that resembled a trophy dash rather than the toughest hundred miler CRA has ever held. First one, then the other would take the lead as the Offy's better handling characteristics or the Merc's brute horsepower could be brought to bear. The rest of the pack tried to press close but caution became the better part of valor as the dust closed in on some of the softer turns.

On the 13th lap, Cantrell's little Offy gave up the ghost from the merciless pounding dished out by the rugged road. Pouelsen's roadster kept up the hot pace, threading through the tail-enders until he had lapped half the remaining field. On the 23rd lap the big Merc sheared a magneto drive and Pouelsen was out for almost 15 minutes. Try-

(*Continued on page 63*)

Pouelsen's veteran mount stormed around two-mile course at average speed of 70 mph.

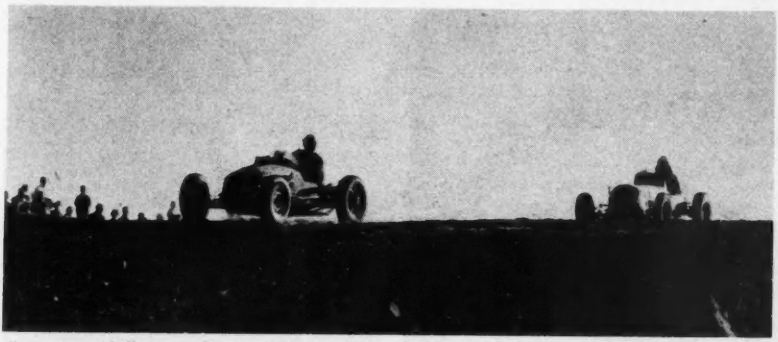
Cantrell, who swapped leads with Pouelsen during early part of race, drove 105 Offy.

Sleeper of the race was jalopy jockey Scotty Caine who drove '32 highboy to second.

You either lead or you get sand-blasted in dirt track racing. Agoura was no exception.

Here's one reason for Caine's second spot finish. Deuce could stay inside on the turns.

Jay Abney, left, boils up from behind Lyle Dickey, right, and Ed Harris in the roadster.



Course was hilly as well as twisting and rough. Here a pair of sprints boil over a ridge.

(More photos next page)

Dusty, tired but still able to grin, Jay Abney pulls in after copping win in last laps.

Many drivers played it cautiously and wore leather face masks, guarding against rocks.

Sprint, driven by winner Abney, was another sleeper, being powered by Ford 6 flathead.

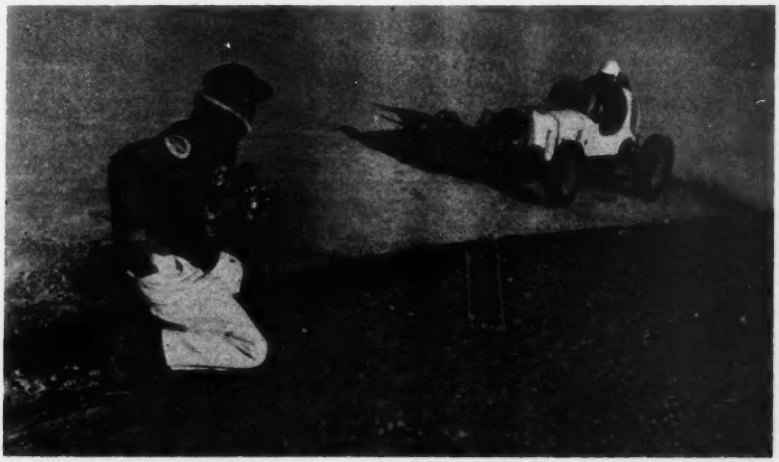
Jack Gardner, right, fought to keep his lead when Pouelsen stormed back into the race.

Roughness of course is evident enough; shock bracket on sprint broke free of frame.

Here's another example: Herman Plummer takes to air on one of three central S turns.

When traffic got thick, so did the dust. Drivers carried dust wipers tied to their wrists.

Gardner hits boulder-strewn turn on which he lost his main fuel tank, costing him win.

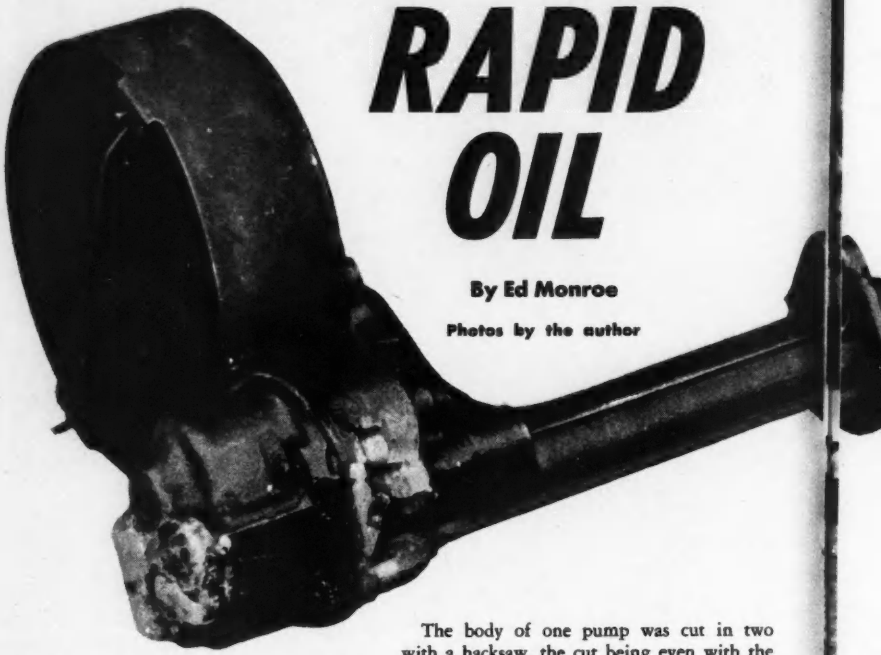


CCM Photographer Rick Rickman shows how he gave his insurance agent a case of ulcers.

RAPID OIL

By Ed Monroe

Photos by the author



IF YOU are the type that would rather build your own speed equipment than to buy it, then try your hand at building your own high pressure oil pump.

While the pump described herein was for a V8 Ford, high pressure pumps for many other makes of engines can be made by following the same general procedure, thus solving a problem for those wishing to increase the oil pressure on engines for which no special high pressure pumps are available.

The pump shown was made from two used Ford pumps.

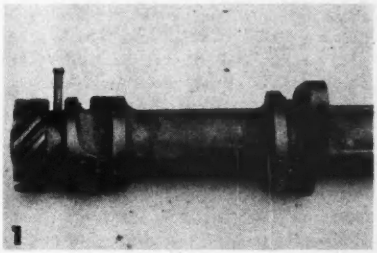
The first step was to dismantle both pumps. The base plates and the idler gears were removed. The pin which holds the pump driving gear to the shaft was removed (See Fig. 1) and the shaft itself was removed from the gear. The shaft, with the pump gear, was then withdrawn from the housing. Care was taken to keep matching sets of gears together.

The body of one pump was cut in two with a hacksaw, the cut being even with the small flange to which the intake is attached (See Fig. 2). The upper part of the body was discarded.

The babbitt bearing was removed from this gear housing to prevent its becoming melted during subsequent brazing operations. The pressure outlet was tapped for ⅜-16 thread (See Fig. 3). A bolt was screwed into this hole and then cut off flush with the outside of the housing, thus forming a plug. A piece of steel was shaped to plug the suction opening (See Fig. 4) and the hole for the shaft was covered over with a piece of steel. These plugs were all held securely in place and made leakproof by brazing them to the housing. (See Figs. 5 & 6.)

Metal must be added to the parting flange. Metal was also added to the parting flange of the other pump body at the same location, but this was done by arc welding with a nickel rod to avoid heating the bearing too much and in this it was not necessary to re-

Build Your Own High Pressure Pump



First step in disassembly is the removal of pin which holds drive gear to pump shaft.

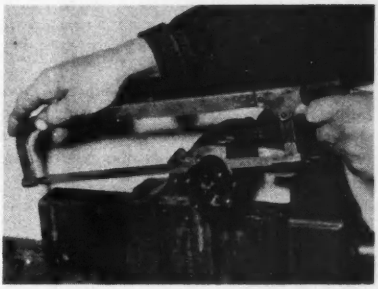
move the bearing. The metal added to the parting flange was then filed down until even with the original surface. To insure the surfaces being absolutely smooth, fine valve grinding compound was smeared on a piece of glass and the surfaces were lapped (See Fig. 7). Cast iron which has been heated will grow, therefore it was necessary to remove a slight amount of metal from the circumference of the gears before they were free. This is best done by grinding on a lathe but can be done by careful fitting and lapping.

The babbitt bearing was now pressed back in the short gear housing. Two of the threaded holes in each gear housing flange were drilled out with ¼ inch drill (See Fig. 8).

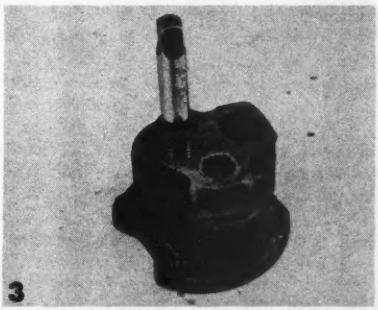
A new, longer shaft was made from an old axle shaft and a keyway cut in the end which was to accept the pump gears (See Fig. 9). An axle shaft was selected as material for making the pump shaft as it is the proper kind of steel for this type of service.

The two pump drive gears were now pressed on the shaft and keyed in place (See Fig. 10). The shaft was now installed in the pump body and the top gear pressed on the shaft leaving .017 of an inch clearance between the bottom of the gear and the top of the body (See Fig. 11). A hole was

(*Continued on next page*)



Next, carefully sever the pump body from one of the pumps with a hacksaw as shown.



After severing pump body, the pressure outlet is tapped for a ⅜ threaded plug.

drilled through the gear and a pin inserted and riveted to hold the gear in place.

The idler gears were placed in each housing. Paper gaskets of various thickness were tried until one was found which would allow about .001-inch end play of the shaft when the two housings were tight. The two sections were fastened together with *Allen head* screws as there is not sufficient clearance for other types of cap screws. Care was taken to keep the two housing sections in proper alignment as the screws were tightened so that the gears were free. The setscrews were then staked to prevent their loosening. Fig. 12 shows completed pump.

Since the pump is longer than the original pump, it was necessary to provide extra space in the oil pan. This was accomplished by cutting a hole in the pan under the pump (See Fig. 12), and welding in a cup-shaped extension made from the part of a Ford oil pan which covers the starter gear (See Fig. 13).

The pump should be filled with oil before being installed on an engine to prevent air being trapped in the lower half of the gear case, which might prevent the pump from picking up its prime.

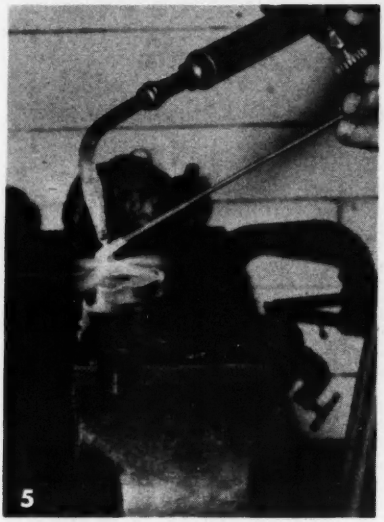
If the pump is assembled to the engine while the engine is on a stand in an upside down position, it may be found necessary to prime the pump by forcing oil under about 10 lb.-15 lb. pressure into the oil pressure outlet in the block to which the pressure gauge is attached. This can be done by putting a tire valve in the top of a small, strong tank and a tubing fitting in the bottom. The tank can be partly filled with oil and pressurized by pumping a few strokes with a tire pump. Once the pump has been primed no further trouble will be experienced.

The capacity of this pump is sufficient to maintain a high oil pressure on an engine having loose bearing clearances even after the oil has become abnormally hot. (NOTE: It is the idea more to raise volume and flow rate more than merely building pressure.)

The Ford pump is one of the most difficult to convert to high pressure. Note how the parting flanges of Chevrolet pumps mate perfectly and no metal need be added as in case of Ford (See Fig. 14).

A piece of soft steel must be carefully filed to fit the contours of the suction passage.

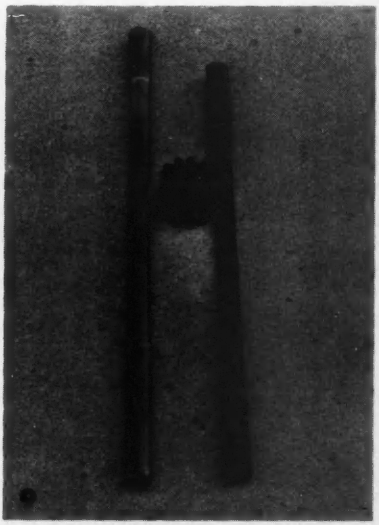
To make an absolutely tight fit, metal must be added to parting flanges as shown here.



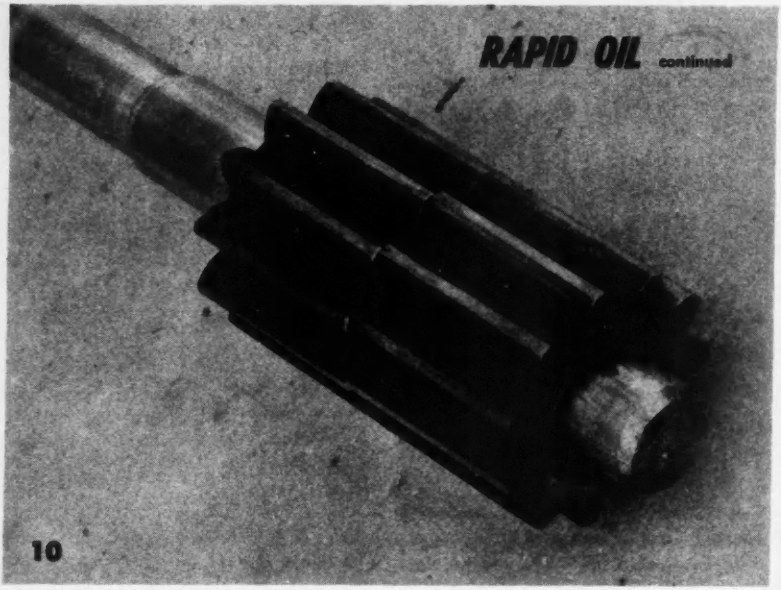
The plug shown in Figure 4 and a steel plate over shaft hole are brazed tight.

This shows the housing after all openings have been covered, brazed. Check carefully.

Two holes on opposite sides of each housing flange are drilled out with a 1/4-inch drill.



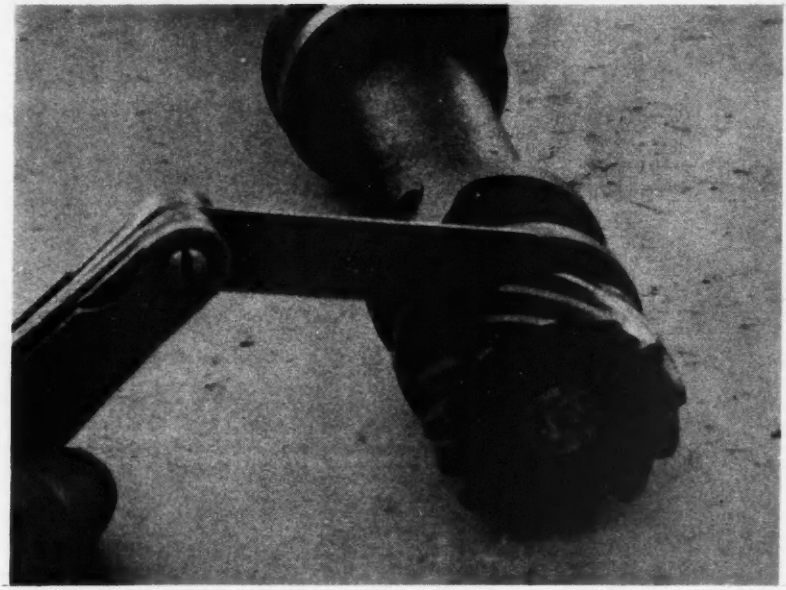
A new, longer pump drive shaft (left) must be made and a keyway cut to take two gears.



Two pump gears are pressed onto new shaft and keyed. Shaft was turned from Ford axle.

Because pump is longer than original unit, a hole must be cut in bottom of the oil pan.

A cap is made for this hole from a starter gear cover and welded tightly over the hole.



Shaft is now installed in pump body and drive gear pressed on. Gear clearance is .017 in.

The same treatment can be given to the Chevy pump. Notice how well parting flanges mate.

Which One Has

By Dick Day

ONE OF the most popular body styles for customizing in the lower priced field, no matter what make, is the club coupe. We've got to go along with this too, for when approached in a conservative restyling manner it comes on with a sharp, sporty appearance. Harry Rothchild of Beverly Hills, California, is the proud owner of this cleverly styled '52 Ford coupe. Considering the cost of the body work, which was $300, and the unique ideas for the headlight and taillight styling, we'd say he has one of the sharpest in town!

Taillights were patterned after the headlights. '51 Olds lenses were used and tunneled 4 inches. This was done by using metal extension caps and moulding them to fenders.

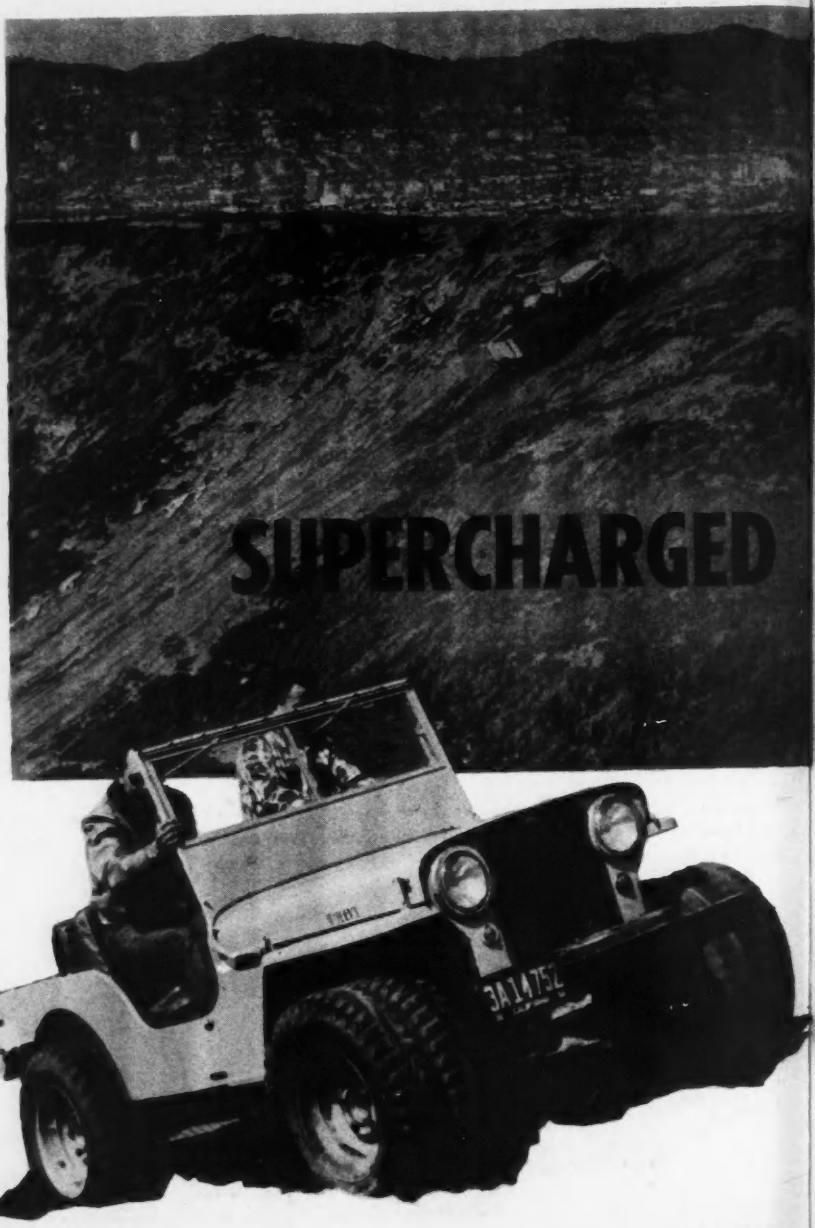
Two '50 Merc grille sections were used, then a pair of bars from another grille were adapted to fill in the center. Futuristic headlight shades were made from formed sheet metal then moulded to the stock fenders. All body work was done by Mars Auto Body.

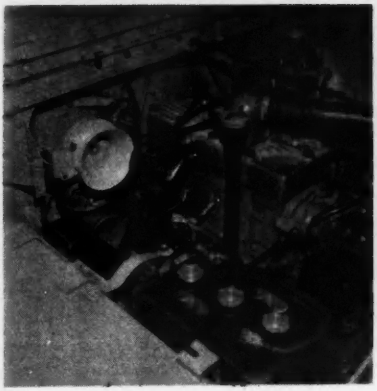
The Toni?

Stock taillight lenses were removed and replaced with '51 Olds units. The stock rings have been moulded into fenders. All body work was done by G & R Automotive.

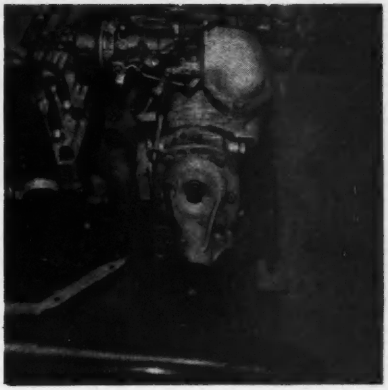
GIL CUDAHY, Pasadena, California, took a little different tack in his approach to customizing; his efforts were directed toward revamping a '52 Ford four door sedan. To the younger set it meant a step off the deep end but, to us, it pulled back a corner of the curtain that veils things to come. The point is that, by comparison, the four door model has the same sharpness as that of the club coupe, proof that the family sedan can serve a gay young blade with a few ideas!

Headlights have been frenched using stock rings. The grille's center bar is an accessory unit which is contoured to the parking lights. This unit can be purchased from accessory houses. The top bar of the grille opening has been built into the nosed hood.


SUPERCHARGED



Engine compartment of Hickey Jeep is packed tightly. Igniter is impulse Wico mag.



GMC supercharger nestles tightly alongside the engine. Carburetor is Chevrolet Carter.

MULE

A Mountain Climber Returns

PERHAPS the most versatile and rugged little hunk of road machinery ever designed was Truck, GP, otherwise known to all the world as the Jeep. Versatile though it is, however, there *are* a few places where the little beast, as it comes from the Willys factory, can't go.

This latter fact was somewhat distressing to a Los Angeles gent, Vic Hickey by name. Vic loves Jeeps and he also loves to head for the High Sierra on hunting and fishing expeditions and the Sierra has a few spots where even a subnormal mule won't go.

Hickey, who owns an automotive engineering firm, decided to see what he could do about the situation. After considerable pondering, he came up with a set of very marketable dual-wheel adapters which gave the little Jeep a somewhat spraddle-legged appearance but also laid enough rubber on the ground to enable the thing to scramble up a brick wall.

All this traction, however, begets a need for more power to pull it. Vic rose to the occasion and designed a head with a combustion chamber allowing compression ratio boosts up to and above 8 to 1. Such is the nature of the beast that C. R. can also be *dropped* from a normal 6.48 to 1 to a low 5.5 to 1, the reason for which we'll see in a minute.

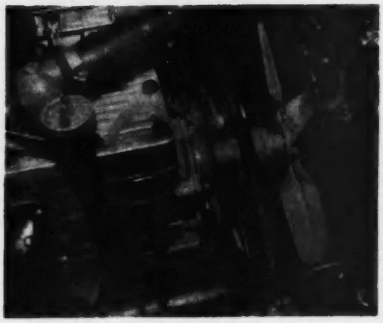
First he tried a 7.75 to 1 head plus a dual carburetor Burns manifold mounting a pair of Ford glass-bowl Holleys. The ports were reamed out to 1.658 inches and the valves narrowed by undercutting. A Potvin road cam was installed and the valve springs shimmed .100 of an inch. In this first engine, the stroke was left stock but the bore was increased by .080 of an inch. With this conversion the Jeep was able to attempt and conquer the hill in the title illustration.

One thing about Hickey, though; he's never satisfied. This time he tore into the engine after even more horses. The bore was punched out another .020 of an inch and the stroke increased to 4⅜ inches, Jahns solid-skirt pistons were installed and the compression was dropped to 5.5 to 1.

(*Continued on page 65*)

SUPERCHARGED MULE continued

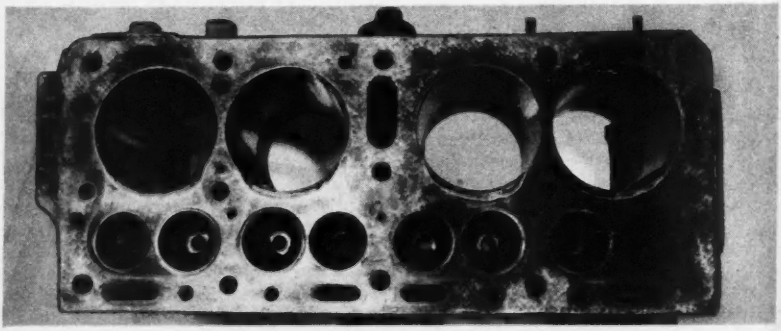
Jeep looks fairly normal except for tow bar and electrically driven winch on front end.



Single belt, independent of blower, drives fan. Blower is driven by two forward belts.

Dual wheels, installed with Hickey's special spacer, put lots of traction on the ground.

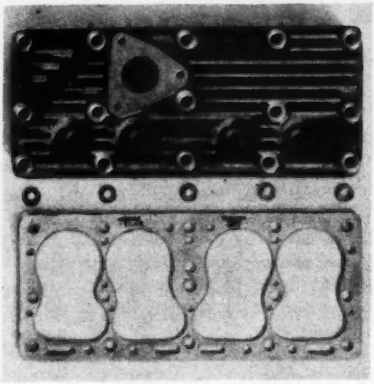
Here, the spacer is shown installed but without second wheel. Car can run this way.



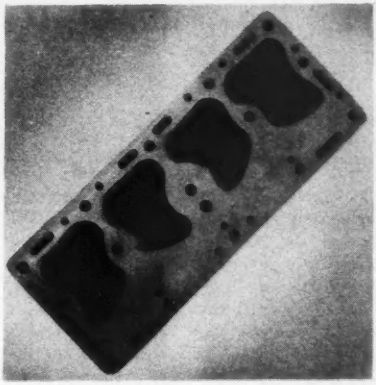
Block was bored .100-inch over stock size of 3⅛. Valve seats still take stock valves.

Chalk marks show how much drive shaft was stretched to move axle. Note shield.

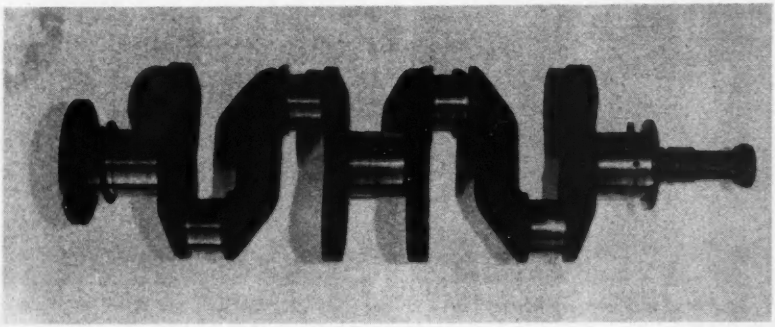
Detail shows winch used for pulling out of deep mud, holes. Motor is from starter.



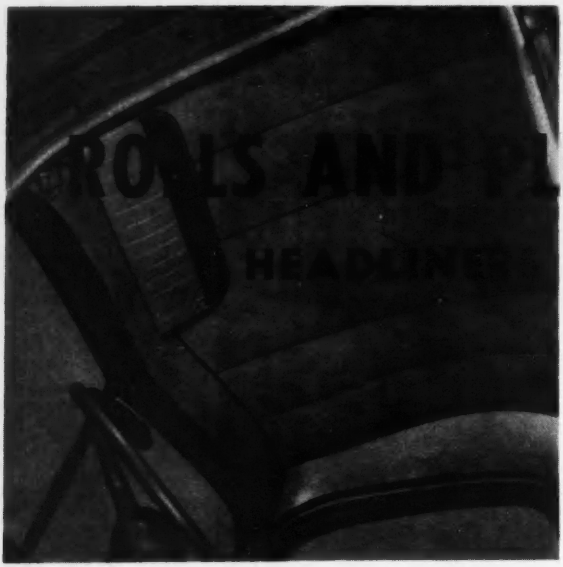
Hickey's special cylinder head which will fit Henry J and Allstate 4 as well as Jeep.



Combustion chambers of Hickey head provide for compression ratios from 5-1 to 8-1.



Crankshaft has been stroked to 4⅝ inches. Strength is more than enough for stroking.



PART III

TOOLS AND TRICKS

HEADLINERS

By Bob Greene

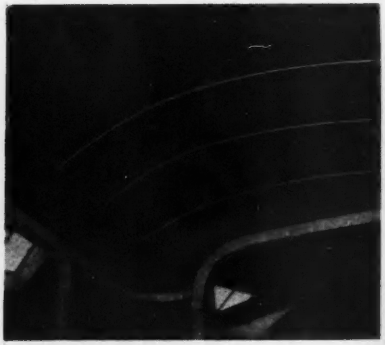
Photos by Bob D'Olivo

PUTTING the lid on the three-part upholstery series this month is the installation of the headliner. This project might appear one of many complications—a job calling for years of skill—but don't despair, for like many specialized fields, all that is necessary are the *tricks of the trade* and a certain amount of *patience.* Here are the tricks, you'll have to supply the patience.

This particular headliner was installed in the author's '40 Ford pickup truck which had to have wire bows built in, but on the average passenger car this part of the job has been furnished by the factory. So actually, to you non-pickup owners, half of the job is already done.

(*Work done at Scotty's Top Shop, San Diego, Calif.*)

Holes drilled in panel above windshield to accept special screw-type nails that hold tack-strip. Headliner will be tacked to this.



In lieu of crossbows, six metal rods were made, their ends inserted in holes drilled in cab. Bent ends prevent slipping through.

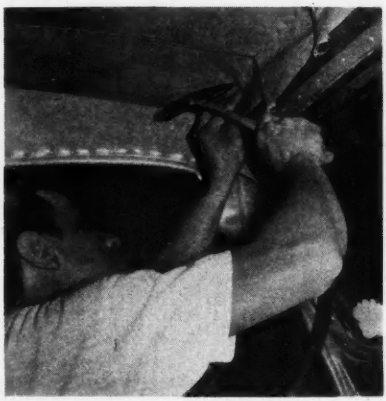
Strips of material are fitted between bows one at a time. A full length loop is sewn between each panel in which wire runs.

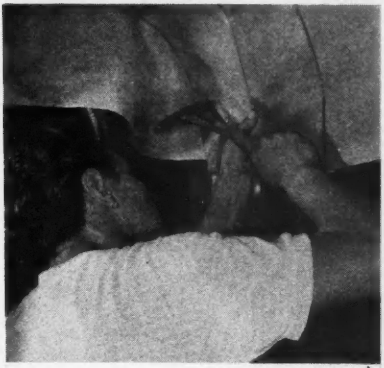
Welt strip, sewn between each panel, adds to appearance. Rod ends bent to keep them from slipping through their holes in cab.

Completed headliner. If cab already has bows, it will not be necessary to make your own. This installation was in a truck.

Bows hold headliner in place while front section is tacked to special tack-strip material that was previously nailed to cab.

Rear section is then pulled tight and tacked down. This step is very important as it is at this time that wrinkles must be removed.





CONTINUED

ROLLS AND PLEATS continued

You should be able to remove remaining wrinkles when sides are pulled and tacked down. Tack heads will later be covered.

Surplus matter is cut from sides. Note that sponge rubber filled door molding has already been put in place prior to headliner.

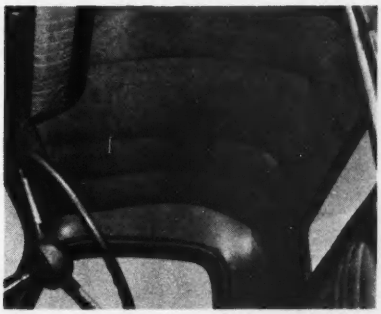
Bottom rear half is much simpler. Note how it is tacked from the back side of material, pulled down, hiding both tack rows.

Corner panel is made up on regular upholsterer's board, will hide the unsightly gap between edge of seat back and the door.

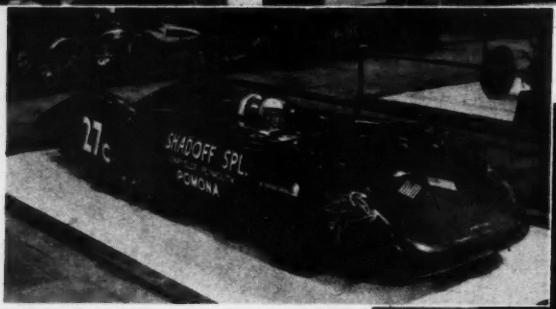
Wrapping paper is employed in making template for section above windshield. Upholsterer's board serves as backing material.

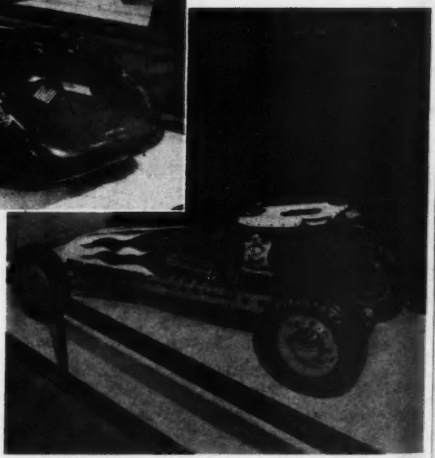
Upholsterer's board is sewn, face down, against Naugahyde material. Material will be folded over edge and covered with trim.

Contrasting trim is folded over edge of panel, which has been placed right side up, then sewn in place, making a neat border.



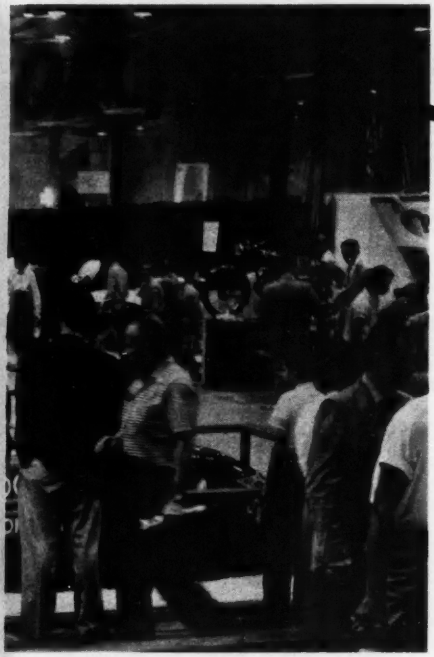
Panel above windshield is held in place by screws and grommets. Note that sun visor has been matched with pleats, not padded.





International Class C record holding Shadoff Special hides tiny queen, Claudia Hill.

Palamides dragster from Oakland, California, boasted rails of aluminum extrusions.



Crowds of Southern Californians mill around hottest, cleanest of western hot rods.

ST...

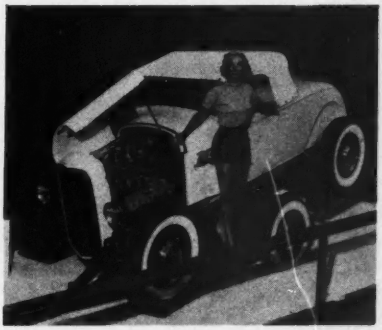
'54 INTERNATIONAL MOTOR REVIEW

ONCE again, the West Coast's most famous automotive extravaganza, the 1954 International Motor Revue and Motorama, hit the huge Pan Pacific Auditorium, this time for a record run of 10 full days.

As the title suggests, it was "the best of the most." Show Director Lee Ryan said that the value of the cars in the show went well over the $2 million mark. He was probably being conservative.

Everything from $16,000 competition Ferraris to street roadsters with thousands of hours of time, time which could hardly be valued in cold cash, were featured. Even Liberace got into the act in absentia with his piano themed Cadillac Eldorado. The Barris Brothers, always good for a jolt, pulled a gold-plated $25,000 rabbit out of the hat, said rabbit being called the Golden Sahara. Did someone say the Sahara is a desert? Not this one—it's replete with bar, ice cube machine, phone, tape recorder and TV set!

Hellwig display booth had activated front end stabilized on one side to show effect.

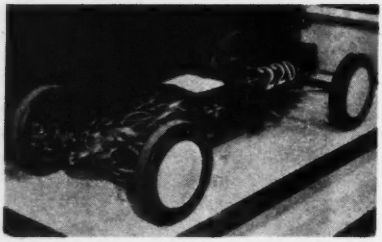


Queen Claudia is decorative but not permanent accessory on Bill Roland's '29 roadster.

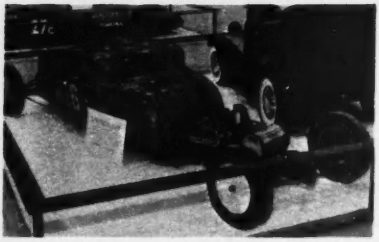
CONTINUED

As yet untested but a potential record holder, Howard Johansen's twin-boom was in.

Quarter-roadster Association set up their display like a race track with cars sliding.

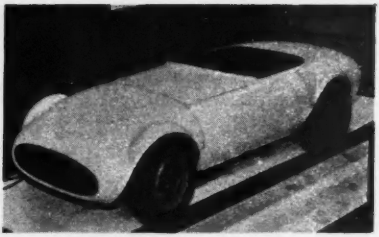


Leroy Neumayer and Reed Brothers' record holding lakester had new blisters on sides.



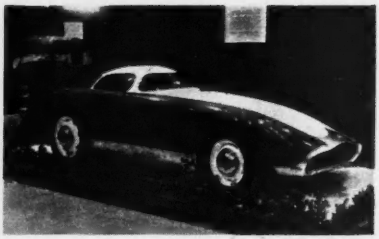
Chrisman Brothers, Duncan display showed dragging sedan, record coupe with engine.

Chuck Porter's yellow chopped, channeled, smoothed pickup was one of show's big hits.

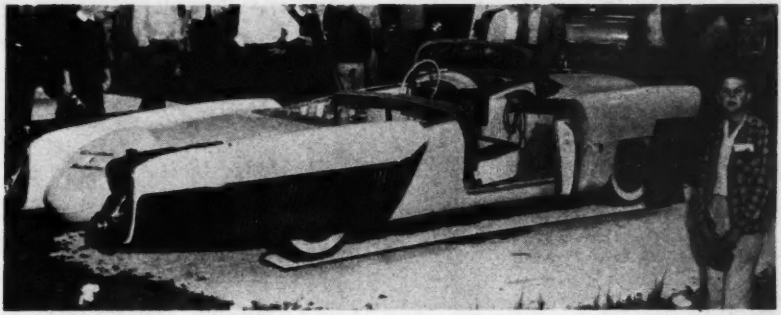


Sleek, stubby Barnes-Troutman Merc sports car was made in Hollywood home garage.

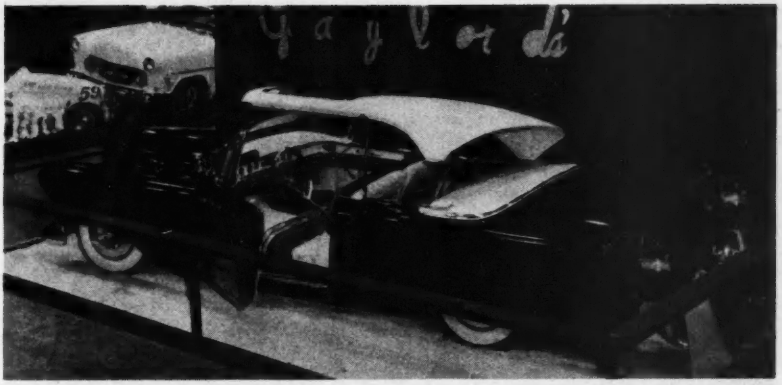
Bob Sorell's latest effort is this beautiful dark blue Fiberglas street sports coupe.



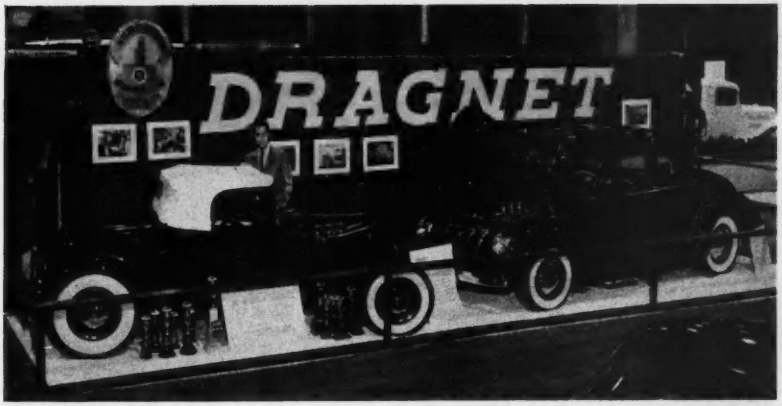
Super Streetliner sports car owned by Denny Larsen was one which turned 186 on gas.



Barris Brothers' golden effort is Lincoln complete with bar, TV set, tape recorder, phone.



Gaylord's newest show car is this fabulously upholstered Buick Century, once a total wreck.



Dum-de-dum-DUM! ! Dragnet gets into act. Booth plugged hot rod case called "Big Rod."

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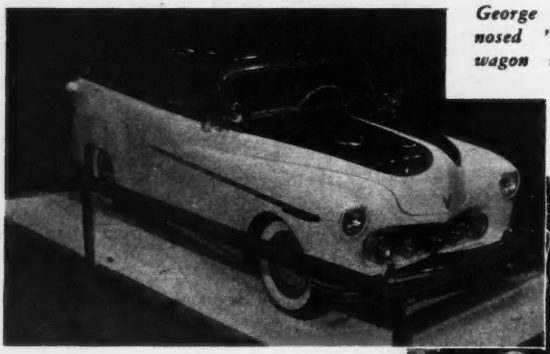
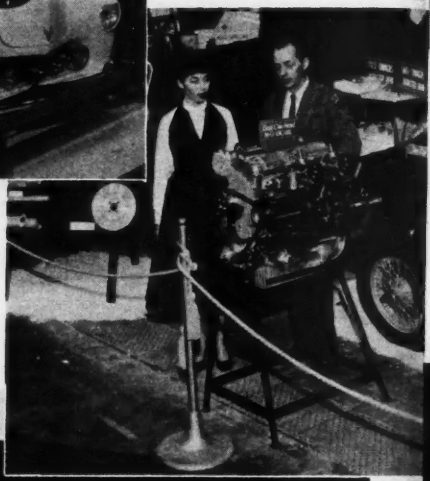
THE BEST OF THE MOST continued

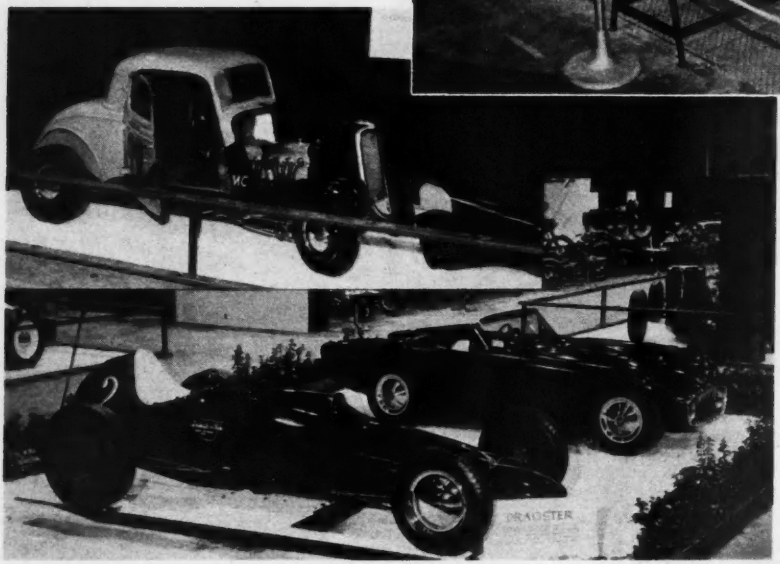


George Cerny's chopped and nosed '50 Plymouth station wagon was expertly striped.

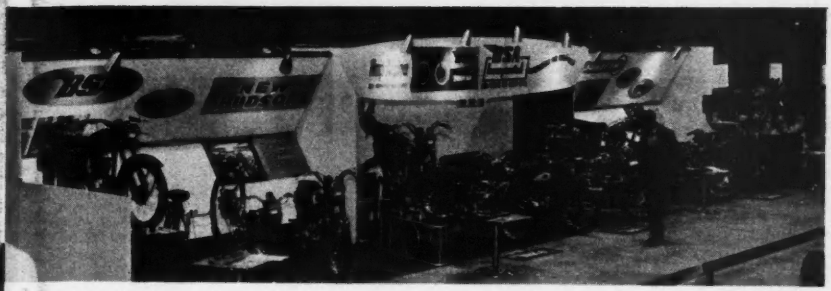


Dale Runyan displayed a new D.O. camshaft MG conversion which will be on market.

Ike Iacono's super-potent GMC powered coupe was displayed in chromed entirety.



Brand new Losinski and Son drag machine had place of honor on one of the 3 turntables.



BSA Distributor Hap Alzina's long spread drew motorcycle enthusiasts in huge droves.

Customized Triumph TR-2 owned by Lenny Greenstone is example of customized sportster.

National Hot Rod Association members (L) registered at well-known Safari trailer.

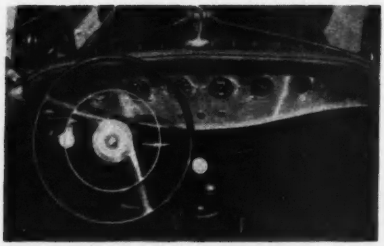
Scott's new side-winder drag chassis was displayed with his well-equipped pit truck.

GRAB BAG

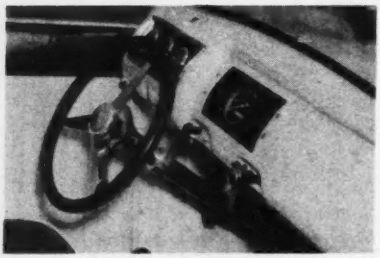
ROADSTER DASH PANELS

THE AVERAGE early model roadster from '29 through '34 usually suffers from a complete and somewhat unhappy lack of instrumentation. However, this lack only leads to another outlet for originality on the part of the builder. The panel, itself, is generally a nice, plain surface that's just crying for attention. Just about any good set of instruments can be stuck into it from Packard to Diamond T truck. Our own roadster had a complete '37 Packard Twelve group which we purchased for six bucks at the local junkyard. Here are several others ranging in price from five dollars to fifty.

Jack McDermott's neat '29 A has an Auburn panel pirated in its entirety from the original car. The panel is set into a filled and molded sheet dash. The only extra unit needed was tach at left.



A stainless steel panel, cut to fit the cowl contour of Jerry Sutherland's '29 A roadster, holds instruments gathered from no one particular source. Some of the meters are boat units, others are aircraft and still others are custom.

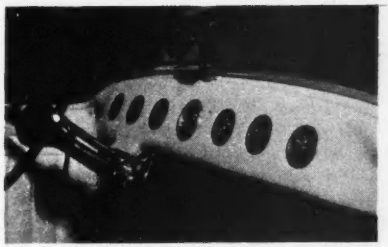


Al Knoll combined the old and the new by using a filled and molded '40 Ford dash in his deuce roadster. However, since the '40 gauges don't really lend themselves to roadster styling, Al set Stewart-Warner gauges into the recesses in dash.

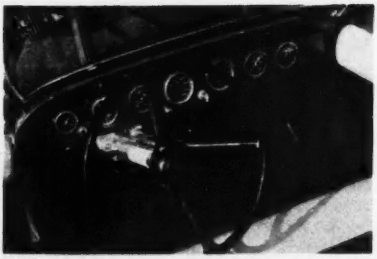
Planing the dash of his '29 A-bone absolutely flat gave Bill Welch a perfect surface. He chose the simplest and one of the neatest ways out by using a custom Stewart-Warner panel originally designed for marine use, sold by Newhouse Industries.

Jim Wenstrup went all-out on this dash. Planned so the entire group can be seen at a glance, the instruments from left are: Tach, 160 mph speedo, fuel, ammeter, a pair of water temp gauges, an oil temp unit and finally an oil pressure gauge.

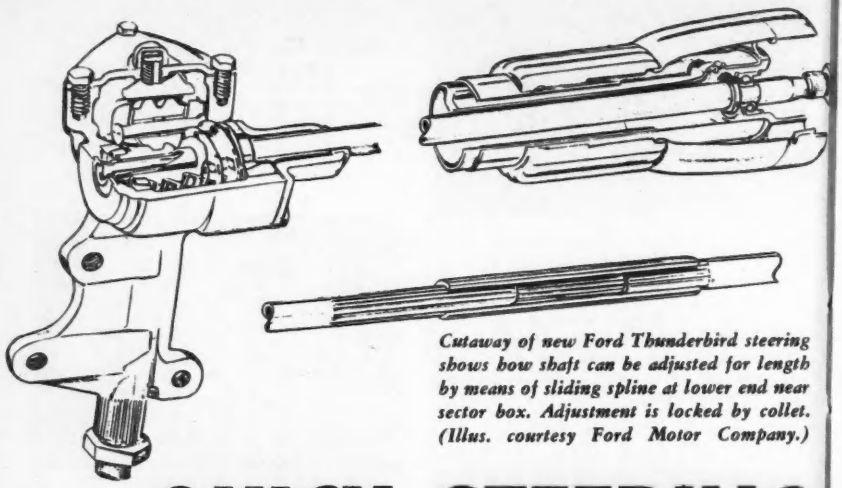
If you like the gauges that came with the car but want something just a little bit different, Barton Root's layout might be just the ticket. All he did was remove and chrome the stock unit with all its parts and attachments to come up with this.



Bert Mouron went the molding and filling route on his neat '32. This gave him a perfectly plain surface in which he placed just those instruments he thought the job called for. The result is simple, attractive and easy to read at a glance.



Don Chapman's '27 T has little room for anything but a plain row of Stewart-Warner instruments. From left they are: Fuel pressure, oil pressure, 8000 rpm tach, 120 mph speedometer, vacuum and ammeter. Most important units are nearest driver.



Cutaway of new Ford Thunderbird steering shows how shaft can be adjusted for length by means of sliding spline at lower end near sector box. Adjustment is locked by collet. (Illus. courtesy Ford Motor Company.)

QUICK STEERING

Editor's Note—We owe readers an apology here, not for Chuck Eddy but for our own sins. On the cover we promised drag-shift conversions. Chuck has gone into remote shift conversions and quick steering. Let it be said here and now that we anticipated Chuck and jumped to conclusions. Consequently, regardless of what it says on the cover, this story concerns the problem of moving that shift lever back where you can reach it without turning into a pattern for a pretzel maker. Come to think of it, this might be considered an aid to quick shifting for drags—less lost motion, quicker shift, right?

AN INTERESTING factor in our subject this month on steering is that very few enthusiasts have a clear idea of how fast steering should be. We will side-step the argument and suggest how steering ratios may be altered for various purposes. In the second part of our opus we will discuss remote shift linkages which might be applied to a sports or competition machine spawned by any "go" artist.

Never A Bum Steer

Before starting the steering story, it may as well be admitted that the inspiration for both the subjects this month was the Ford Thunderbird. This line of thought was stimulated when we first discovered that the steering ratio of the little jewel was three and three-quarters turns, lock to lock, a full turn less than the standard Ford steering ratio.

Feeling that the expression of ratio in "turns lock to lock" is more significant to most of our readers than 26 to 1 ratio, we will use it in this article as an expression of steering quickness. Before going farther, it would be well to point out that in any regularly used steering system there are at

least three places where the overall ratio or "quickness" is established. Altering dimensions of the parts involved will change the ratios and it's up to us to find which we wish to change. The accompanying diagram will indicate the three points determining steering ratio in a typical modern layout.

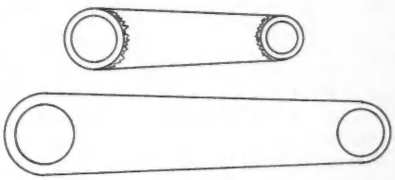
It is fairly obvious that we could obtain quicker steering by changing the gear box ratio itself. If a box could be found which produced the same angular movement of the Pitman arm for *less* turns of the steering wheel, the *numerical ratio* of the steering would be decreased and we would have quicker steering. Since it is normally difficult to find gearboxes of various ratios which would fit in a given chassis, the more usual method is to install a longer Pitman arm. This is relatively easy if the steering linkage is similar to the early Ford type where the Pitman arm swings fore and aft along the frame rail and is linked to the steering knuckle arm with a tie-rod parallel to the frame. Sometimes a search of the junkyards will yield a longer Pitman arm which will fit the splines of the sector shaft of the existing gear box. The "Quick-and-dirty" school may even flame-cut the arm in the center and insert and weld in an extension. Most of these jobs wouldn't pass a Magnaflux test and the splicing method shouldn't be used.

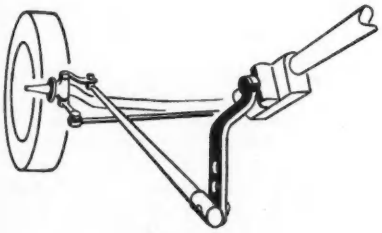
(*Continued on next page*)

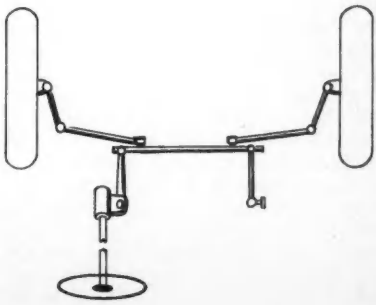
and SHIFTING

By Chuck Eddy

RIGHT—Drawing shows how machined ends of stock Pitman arm are flame-cut to diameter of holes in new ⅜" 4130 arm. BELOW—Sketch shows how such an arm might be adapted to early type Ford steering unit. Note extra length adjustment.







Later Ford steering layout shows how both Pitman, idler arm (right) must be lengthened equally. The other method is to use the shorter T-bird steering knuckle arms.

STEERING & SHIFTING

continued

The most critical parts of the Pitman arm are the machined ends. These can safely be incorporated into a new, longer arm cut from 4130 sheet, at least ⅜ inch thick. The ends of the original arm should be carefully cut off the body. All slag should be ground from the cut areas and at the same time they should be radiused to produce a uniform thickness. After the forged ends are reworked completely, holes to snugly receive them should be flame-cut on the center line of the new 4130 arm. Again, these holes should be cleaned of slag. The ends are then fitted into the holes in good alignment and tack welded. Complete the job by *ring welding* on both sides of the plate. Alloy steel rod should be used and by a welder who is familiar with the characteristics of the metal. If you place a high value on your neck have the completed arm stress relieved by a heat treating firm! It is not unusual to have higher stresses build up within an assembly of this kind than the strength of the metal will withstand. Be sure that the breaking point isn't reached as you tool your beauty through a tight turn.

Variable Ratios

If the application of your car makes a *variable* steering ratio desirable, two or even three of the small tapered sockets of the Pitman arm may be welded in, on one inch centers. By installing the drag link ball stud in the socket farthest from the gear box, the faster ratio will be obtained, and where slower steering correction is necessary the ball stud can be moved toward the sector shaft. This type set up would prove useful if the competition machine were to be used in such widely varying events as dirt track or road racing and straightaway or acceleration events. Perhaps a better reason for its use would be merely to establish the most pleasing all around ratio on an untried set up on which the exact ratio is unknown.

A third approach, less seldom used, is to vary the length of the steering knuckle arm. Shortening of this arm has the same effect on ratio as lengthening the Pitman arm. On the Thunderbird, the steering arm on each side has been shortened to 6⅜ inches of effective length, while the standard passenger car is 7⅜ inches. This seems to produce a very pleasant compromise between the usual slow passenger car steering (4¾ turns) and the extremely quick (2¾ turns) race job.

To our knowledge, little has been done to modify late model steering linkages because, in the normally used layouts, the idler arm length would have to be changed to correspond to the increased Pitman arm length.

The Thunderbird steering knuckle arms save all this work and require no other rework except a resetting of toe-in and center point after installation. These will be available through Ford dealerships soon. Part numbers for these are B5S 3130-A and B5S 3131-A for right and left arms respectively. They will retail at approximately $5.50 each, a considerable savings over the price of a new, fast acting sector box.

As a sidelight on the use of these arms it should be pointed out that some error will be found if the wheel alignment mechanic checks toe-out on turns. The T-bird is designed to have 25 degrees to match its 102 inch wheelbase, while the stock Ford spec is 22½ to 23 degrees, because of the longer wheelbase.

A little trial may be necessary to determine the best handling combination, but late Ford specs have changed to allow more caster:

Caster ½ degree, positive, minimum, to 1½ degrees, positive.

Camber ¼ degree, positive, minimum, to 1¼ degrees, positive.

Toe-in should be from 1/16 inch to ⅛ inch, our favorite setting is toward the maximum side on caster and about ¾ degree on camber.

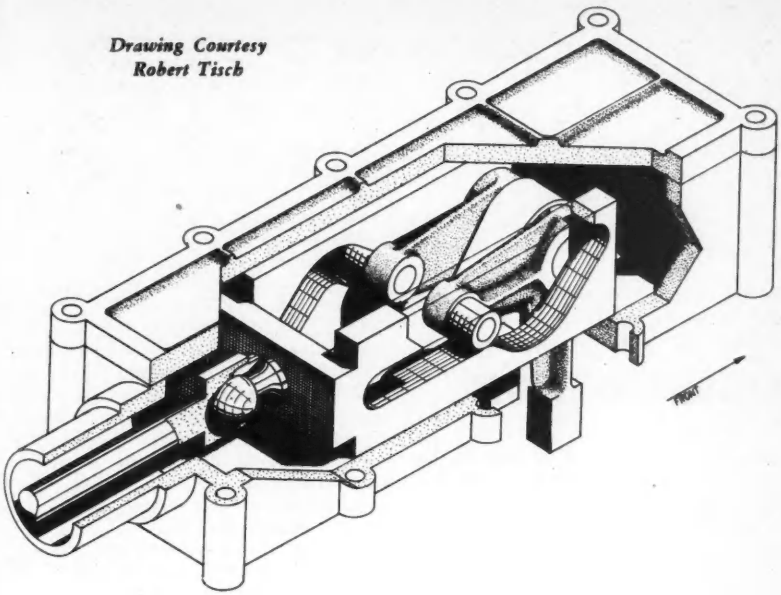
More Steering

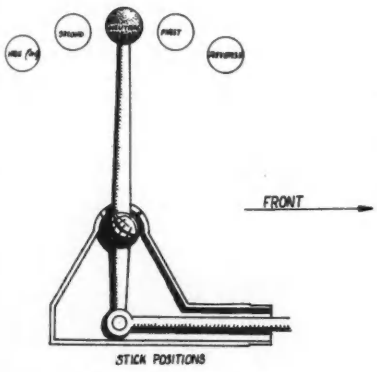
Another feature of the T-bird which is new for a domestic car is the sliding steering column. An extension range of three inches is provided by splining the lower part of the shaft just above the gearbox. A mating female splined sleeve is pressed onto the upper section of the shaft to complete the shaft sliding joint. The column tube or mast jacket guides the upper or steering wheel end which slides upon it and is locked to it by a collet locking sleeve.

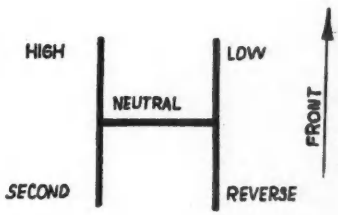
We would recommend that this set up be installed only in a chassis where the steering wheel angle is near the vertical. If used at

(*Continued on page 42*)

Drawing Courtesy
Robert Tisch

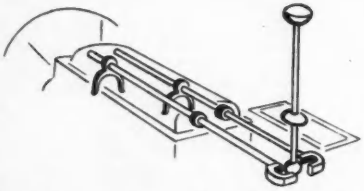






GEAR POSITION INSIDE TRANSMISSION

Here is a truly remote shift that might be operated either hydraulically or by remote rod, stick movements being in a straight line as in the progressive type of motorcycle shift. The rod operates two slotted cams which in turn move the two bell cranks. The bell cranks operate the shift forks in the gear box in the normal manner. The housing replaces the cover on the top-shift box and could be used with early Cad or Ford unit. To help in understanding the action, remember that fork positions are the reverse of the stick positions in standard transmission. Any good machinist could make this conversion.



In this remote conversion, the shift rails have been lengthened rearward as in case 1 in text. Motion of force is purely linear.

STEERING & SHIFTING

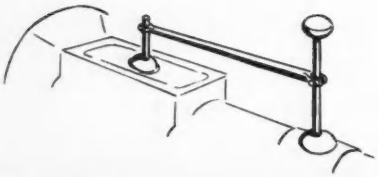
continued

an angle normal to most late passenger cars the wheel would move *above* a comfortable level while not producing the desirable *fore* and *aft* movement. The worm and sector used in this box produce the same ratio as all 1954 Fords, and should therefore be used with the previously mentioned short steering arms.

We will now make a fast shift and talk about another kind of linkage . . .

Remote Transmission Shift Linkage

The Thunderbird, when furnished with the standard or overdrive transmission, is equipped with a not-new but very clever shift linkage. As the sketch shows, the mechanism embodies a stubby shift lever (7210) actuating either of two swinging levers (7302) below it by means of a tee-shaped lower end. The pin (7241) upon which the shift lever pivots also pivots the swinging levers. These levers are coupled to the outer shift levers on the transmission case by the Reverse and Low rod (7328) and the Second and High rod (7326). Only one length adjustment is necessary on the rods and this is a pin joint (7492) which screws on the end of 7328. The complete upper portion of the assembly (7398) fits the contour of the driver's side of the tunnel and fastens to it with metal screws. Sealing is provided by a rubber boot (7277).



Case 2 shows forked linkage from dummy lever transmits motion to standard shift lever. Twisting action gives tendency to slop.

It is interesting to note that the lever is capped with a Model "A" Knob (7213). We feel that this would be more poetic if it was off a Model "T" Moore box, but the latest "T" is also available with a slightly more advanced form of planetary transmission than its worthy ancestor.

An improvement of the system for a more positive *feel* of the shift lever would be the substitution of *straight* rods of ⅜ inch diameter with aircraft ball joints on the ends of both. The dog-legged 7328 rod looks to us like a candidate for a case of "bends" if a smart Low to Second shift was made!

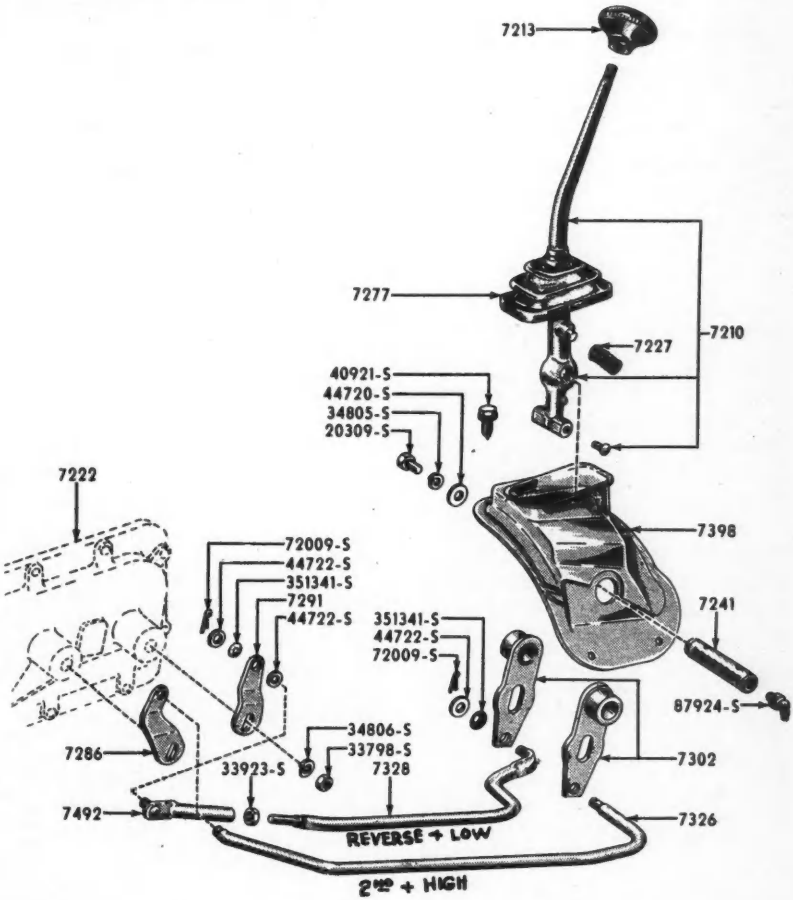
Upon driving this model, we were pleased with the arrangement and function of this linkage. Some of the short-levered jobs we have driven seemed to lack the leverage to permit shifting without excessive push. Note that the spring (7227) pushes the shift lever toward the Second and High side and makes a slight pressure to the left necessary to obtain Low or Reverse. This desirable feature is missing in many of the home-made remote linkages.

Remote Linkages For Older Boxes

In general, it should be noted by the do-it-yourself boys that the problem is to either select the extended shift rail just below the lever or to extend the lever *movement* forward to the original lever to allow the selection to occur normally. In the first case we only transmit *sliding forces* and in the second case we transmit *twisting* and pushing and pulling via the connecting tube.

Variations of both of these are used sometimes to select remotely, five speeds forward. Any attempt to fabricate any of these systems should be preceded by some head work to determine which approach will be best. Rigidity of all the parts in the system is essential to properly operate the synchronizers. If springiness exists in the linkage, it produces poor action of the synchro clutches and ragged shifts.

Here are all the components of the Ford T-bird floor-shift conversion. This unit can be used in its entirety with any Ford, Merc side-shift gearbox. Further details in text.

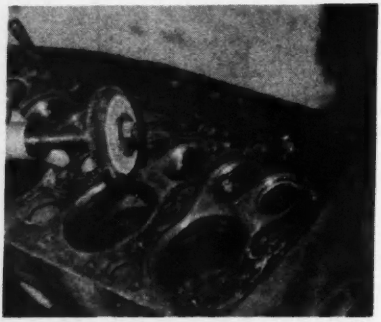


HERE'S HOW

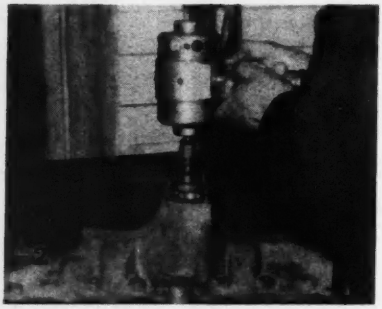
BUILDING A SPORTSMAN—PART III

THE ENGINE

Text and Photos by Ed Monroe



Large, three-inch stone mounted on flexible shaft is used for rough grinding of relief.



Utility grinder and sanding drums are used to clean out the ports in block and manifold.

A NUMBER of modifications, many of which are experimental are planned for the engine. However, in order to better evaluate the various modifications, and in order to be able to eliminate bugs more easily, it was decided to start with a fairly mild engine and add modifications one at a time.

After dismantling and cleaning the engine, it was relieved. The process of relieving an engine consists of grinding away some of the metal between the valves and cylinder and thus enabling mixture to flow from the intake valve into the cylinder and exhaust gases to flow from the cylinder to the exhaust valve more smoothly and with less restriction.

Ford and Mercury engines have a ridge of metal between the valves and the cylinder, so they benefit more than most engines from the relieving process. All but two of the cylinder head studs were removed from each side of the block. An old head gasket was held in place on these two studs and was used as a guide during the relieving process, and to prevent damage to the mating surface of the block in case the grinder should accidentally slip. (See Fig. 1.) The

(*Continued on page 60*)

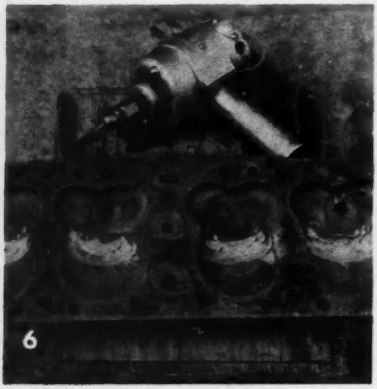
To line up with altered intake ports, a new manifold gasket was marked and cut out.

Exhaust ports on ends of block were straightened by drilling and cutting with a chisel.

The straightened ports were kept uniform by welding in half-sections of 1¼-inch pipe.

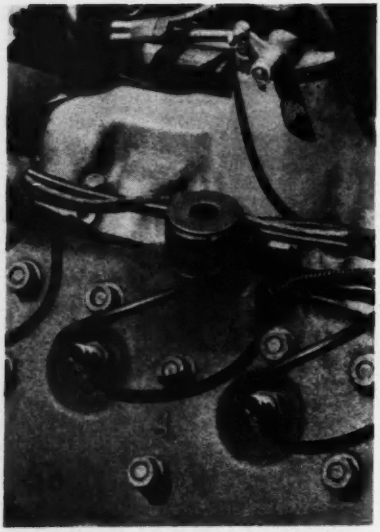
BUILDING A SPORTSMAN

continued

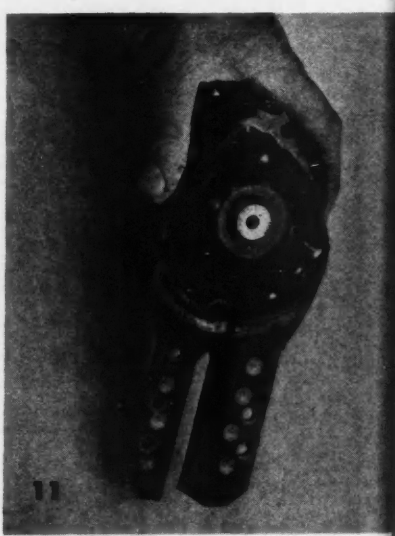


The heads were heated and then filled with arc beads, ground smooth with die grinder.

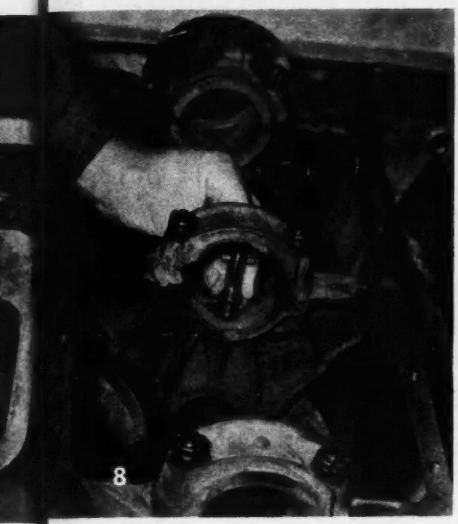
After filling and annealing, the heads were mate-lapped to the block for a perfect fit.



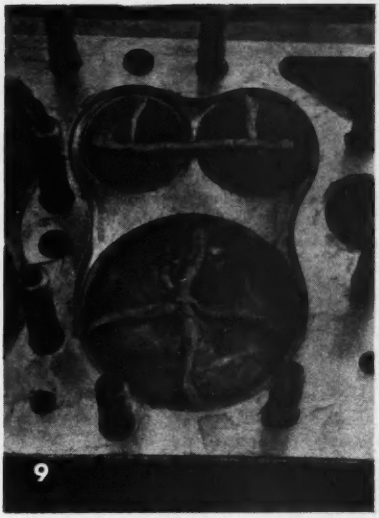
Water flow through heads was restricted by means of washers, thus promoting cooling.



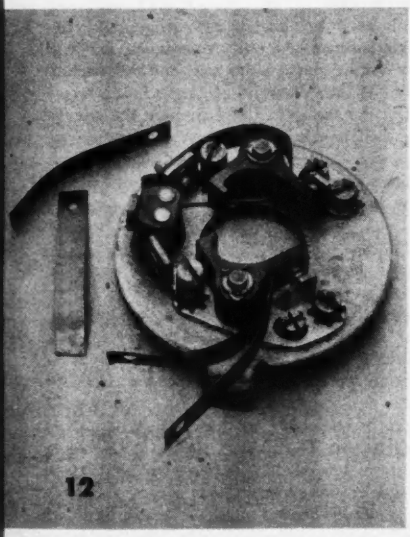
Generator bracket and pulley, after drilling and lightening, was used as belt tightener.



The main bearings were checked with an inside micrometer and found to be just right.



Clay strips over both valves and piston were used to make sure that clearance was ample.



Distributor breaker points were modified by use of two additional springs as shown here.

Headers, to fit altered exhaust ports, were built from scraps of junked exhaust tubing.

THE MODIFIED

By Chuck Eddy

TO PREVENT our observations on this engine build-up from getting out of hand, we'll follow Ed Monroe's lead and make some slight additions to his story.

If the limitations of the association in which the car is to be run limit the use of monster engines, we would suggest that a 1942 V8 block be used as a start. This will save much work on the relieving and the factory cast-in reliefs need only be carefully smoothed. If the relieving of your block is necessary, perform all the "hogging" operations before the cylinder boring or honing operations. Valve reseating operations should naturally be last as precision at this point depends somewhat upon the *stress relief* which occurs on the relieving operation. Grinding away the thick areas at this point will also afford considerable protection from heat cracking. This fix was used by Ford dealers on the 1949 and 1950 F-8 "L" heads.

Boring

Some friction may be eliminated by careful boring, particularly if the bores can be aligned perpendicular to the line of the main bearing bores. One speed secret consists of a piece of 2-inch plate, flame-cut to the shape of the head gasket, minus water holes. Both sides are Blanchard-ground parallel and counter-bored holes made at all head bolt locations. The plate is secured to the block and torqued to 70-80 foot-pounds on the Allen head 7/16-inch capscrews. This bore jig pre-stresses the block to the shape it has *with the heads on*, while it is being bored. The idea is to avoid egg-shaped cylinder bores which result if normal procedures are followed on the surprisingly flexible block casting.

After all machine operations are complete, we heartily endorse Monroe's suggestion of thorough block cleaning with hot soap and water.

Heads

The only speed secret we can suggest here is to employ milled 19SB (Denver) heads. These naturally are scarce as hen's teeth but they were stock and will allow almost 9 to 1 C.R. with less restriction than the standard stock heads of the era. We recommend measuring the cubic content of the combustion chambers, as some heads have a tapered characteristic which may be corrected on the milling operation, saving much chamber grinding.

Manifolds

We assume you are using stock intake manifolding, well matched at the ports. Beyond this, we suggest that shim stock of 10 thousandths of an inch thickness and 1¼ inch by 2 inch in size be used to block the riser passages. But wait, we suggest that you try cutting round holes near one end starting with ¼ inch diameter and progressing larger until the amount of flow through the riser is reached to produce the best acceleration response. On a single-carb job where engine rpm will vary considerably this may help on the lower end.

Camshafts

Ah, there is the magic word! If you must conform to "stock" cam limitations, be assured that a cam can be ground to do a better job. This stick would check out at stock timing and lift but use large flank radii to obtain more flow through the valves. Careful attention to valve lightening and lifter weight will be necessary to determine where float will occur. The lightest spring tensions you can tolerate should be used to again save valuable horsepower. Such a cam will have a good lower end torque characteristic and will turn all the revs you need on most tracks. Reread CCM, Oct. 54, *Porting For Power* and take advantage of *every* valve

STOCK ENGINE

PART II

train refinement the rules will allow.

Exhaust System

Both individual stacks and exhaust collectors should be tried to establish an exhaust system tuned to deliver the horses where the engine operates *most of the time.* A sensitive altimeter can be used to measure pressure at a tap on each exhaust pipe about 6 inches below the block. Arrange the piping to produce the *least* pressure and *pulsation* when the engine is turning under load at the average rpm you reach on the straightaways.

This may indicate that you will want to change to a header arrangement ("W" or 2 "Y"s on each bank) to obtain the smoothest flow. This is one avenue of experiment that we heartily recommend as one of the best speed secrets of fine tuning.

Ignition

So much has been written on this that we can not do better than to refer you to past CCM writings. Use the hottest plug you can tolerate for the fuel and course conditions. Experiment with gap sizes around the .035-.040 inch range and see if the rest of the system is good enough to fire the wide gaps. If your heads employ 18 mm plugs, chamfer the gasket face with a 1-inch 60° counter sink and try the new Champion 860 or 870 plugs for the 1955 Fords. These have definite merit and may solve some fouling problems with their latitude.

Distributor action should be carefully checked on a stroboscope. Advance *curves* also bear investigation along with the initial timing used. Point float may be observed by hooking a power timing light to an externally mounted coil and using it to make points appear stationary. Use of a commercial Strobo-Tac may indicate that the use of *too much* point spring tension has produced *point bounce.* This is also noticeable on a standard distributor stroboscope as a flickering, second image of the advance arrow flashes.

Lubrication

Use of the double pump looks to us like a red-hot idea. Ample pumping capacity is a very good start and follow through by tracing out *all* oil passages to assure that the supply is neither restricted nor bleeding away. See our last month's GMC thing if you need more convincing of the importance of this lower end insurance. Use the lightest oil that won't burn away too fast or cause serious pressure losses when hot.

After you have done everything else you can think of, stop to figure what else you can do to lessen the engine's load. Let it spin free with the highest numerical ratio rear axle that the engine can rev to on the given track. More engines have blown from lugging than from winding and the early Ford will wind happily. Which brings up the last point, balance the engine as carefully as it can be done as vibration represents more lost horsepower.

If you desire a lighter flywheel, finish the job with the light 1935 truck flywheel which doesn't carry much excess weight.

Editor's Note: Because the conversion described by Ed Monroe in this month's "Here's How" is a very specific case, we asked Chuck Eddy to generalize on the subject. Ed's engine is being built for use in an eastern association and is subject to the limitations imposed by that association's rules. Chuck has taken the same subject and expanded it, theoretically, to cover other areas. If you discover certain elements of "cheatin' fair" it's because both Chuck and the editor felt that these little gimmicks shouldn't be the private property of a few but that the knowledge that these tricks exist and the methods of use should be widely known.

TORCH TIPS

BUMPER TIP EXHAUST

Photos by Bob Hardee

This type of exhaust treatment works out exceptionally well on '49 to '50 Ford. Contouring rib into tips is clever styling gimmick.

IF YOU'VE been looking for the simple approach to a bumper tip exhaust arrangement, then look no farther. Ed Fahlsing, owner of the car, and body man Norwood Hooper of San Diego, Calif., thrashed this bumper exhaust system out in half a day. Only tools necessary for the job were a welding outfit and body grinder. This puts it directly in the backyard category, so it looks as though it's yours for the choosing!

Before removing bumper decide and mark off desired position for the protruding tips.

Scribe off diameter of tips onto bumper. Cutting torch is then used to remove plugs.

Tip is fitted to extend 1½ in. out from bumper. Tip may be arc welded or brazed.

After welding is completed, grind the weld bead semi-smooth with a 36 closed grit disc.

To finish filing down and smoothing the weld bead employ a small round hand file.

Since smoothing, contouring is important for appearance, finish out with emery paper.

For a perfect job all grinding and filing marks on the surface should be sanded out.

Connect tips to pipes with flexible tubing. Rechroming bumper should cost $16.00.

NEXT MONTH:
FUTURISTIC HEADLIGHTS

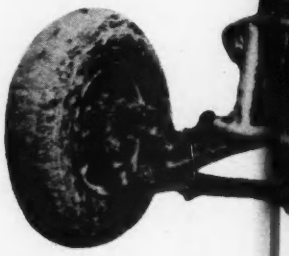
TEMPEST ON A MUD

MICRO MIDGETS STORM FLORIDA IN REGIONAL CHAMPIONSHIP

By Frank Trembley

THE NEWEST, hottest, most thrilling thing to hit automobile racing circles are the Micro Midget class racing cars. They are the baby descendants of the mighty Indianapolis giants, and probably the only cars being run today where the spectator can be assured that wherever he sits he will be able to view the entire course and all that takes place upon it. An idea of the size of these tracks can be gained by imagining two race track ovals laid out upon a football field, one on either side of the fifty-yard stripe. In fact the micro's one-eighth mile track is but a couple of shades larger than the ones used by those who race the control line model cars, such as your young sons may do over at the city park playground.

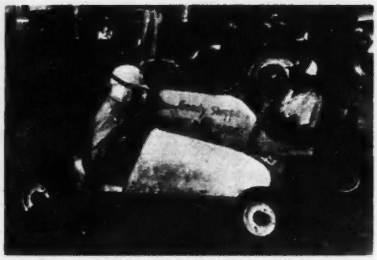
The remarkable growth and interest shown in the micro class cars can be attributed to the relatively low cost of both the cars and their operational and maintenance costs. As compared to the price of a standard size racing machine which may cost anywhere from $4000 to $150,000, the $400 top cost of a micro is very low indeed. With the expensive competition machine, the operation and maintenance costs go hand in hand with the high original cost. Not so with the micro. Possibly the real attraction which the micros hold for their fanciers is that man is forever a boy at heart and these cars are almost nothing more than a slightly enlarged pedal pumped car with motor and beefed up construction. In fact the cars are so small and light that if you will look very closely at one of them you will notice that what appears to be an odd-shaped grille is in reality the soles of the driver's shoes sticking out the front end. The cars rarely will weigh over 350 pounds fully loaded with driver for racing.



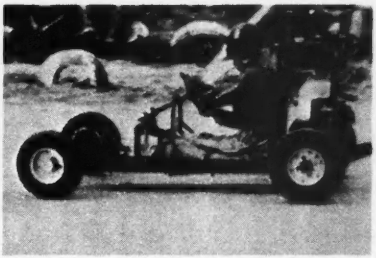
According to legend, micro midgets got their start only a year or so after the end of the war. A pilot was flying over an Iowa farm and saw two tiny cars racing around the farmyard. He later inquired about them, saw the cars close up and talked to the builders, a couple of young farm boys who had a yen for racing but neither the time nor money to satisfy the desire so they built the first micros. The pilot built one himself and as others saw the fad spread and soon turned into a full fledged racing class. Competition amongst the micros spread so quickly that rules and regulations had to be set up if all were to compete on favorable terms. The standards which are presently in force resemble very much the standards and qualifications of their larger and faster brothers. But there is no doubt about the micros being the smallest adult carrying cars racing anywhere in competition. *(Ed. Note: There's an even smaller class—but that's for a future issue.)*

Engines powering the micros are strictly American products of one cylinder air-cooled

PIE



"You go your way, I'll go mine . . ." A couple of the boys seem to be in a bother.



Running a car in this open fashion aids in lightness but tends to run up cleaning bills.

construction. Many are the former power source of lawn mowers, scooters, washing machines, auxiliary generating units etc., but the really serious owners now buy their motors new and install them immediately in the cars. Displacement is limited to 18 cu. in. for flatheads, 15 cu. in. for ohv, 11 cu. in. for ohc and 7.5 cu. in. for 2-cycle affairs.

At present there are no restrictions against type of fuel or supercharging. The placement of the engine is dictated entirely by personal choice, the rear mounted version immediately behind the pilot seeming to be the most favored due to a number of conditions. Rear engined cars can be shorter providing better

(*Continued on next page*)

MUD PIE MIDGETS continued

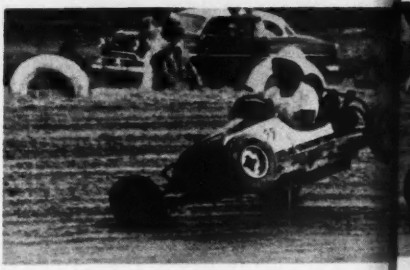
maneuverability through packs of cars and turns, also the rear mounted engine permits the driver to reach around and make adjustments while the car is in motion, a difficult feat on a front engined car.

Suspension, braking, steering and power train also seems to be largely a matter of personal choice and availability of parts. The solid front axle with transverse leaf springing combined with a solid, non-sprung rear axle is probably the most popular combination with a solid non-sprung front axle running a second choice. One or two cars are to be seen with parallel arm and coil front suspension reminiscent of the Flexible Flyer wagons that children use. There was even a car running which had parallel half-leaf rear springs a la Bugatti.

Transmission of power to the driving wheels, which almost always are the rear wheels, (in fact, I never have heard of a front drive micro, which might really be something) is accomplished by means of a propeller shaft in case of front engined cars and by chain drive in almost every case where rear mount engine is used. On the rear mounts the chain drive from the crankshaft is run to a gear on a jackshaft stub from the differential, which provides means of quick gear ratio changes by merely changing the size of the bottom gear. A few cars use fully enclosed gear drive on rear engine cars but this seems to be the exception rather

(*Continued on page 56*)

Starting line-up of 24 cars loads the track



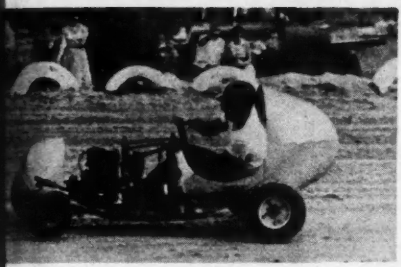
A pair of the boys cornering at speed, with

Some cars use front mills as shown here but most use rear engines for bite in thick goo.

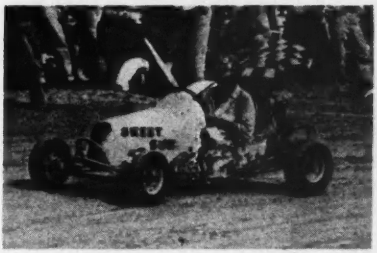
The muddy track was slick enough for the

all the way around the last turn of course.

Where else can you rebuild engine between races? Contestant fits wrist pin in piston.

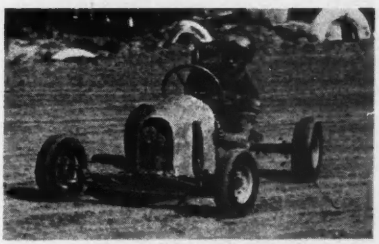


the lead car in the true Grand Prix attitude.



Bill Hughes, winner of the 75-lap feature takes his victor's lap with checkered flag.

tiny cars to broadslide in the best style.



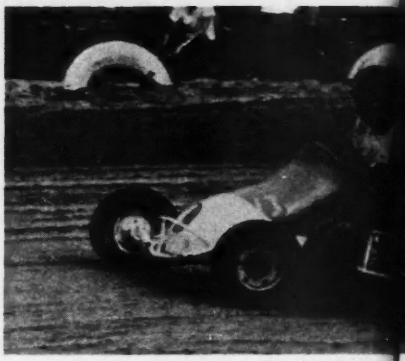
This could be rough on those new suedes, but for that burning sensation it's great.

(*Continued from page 54*)

than the rule. A few Crosley rear ends are evident here.

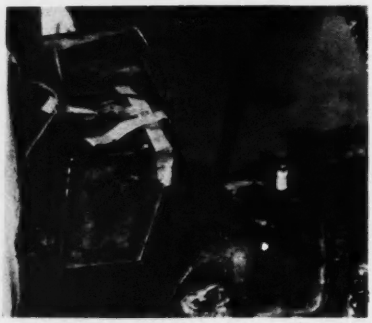
Starting is provided by rope or foot lever depending upon engine type and again, its location. The rear engined cars seem to be able to utilize any type of starting without trouble. No transmissions are used as none are needed. You are either going flat out or you aren't going. Brakes are quite simple but adequate. Usually an external band contracting onto an exposed lining, much like a transmission brake, and controlled by a hand lever mounted on the left side near the cowl. This lever when actuated pulls a cable extended to the brake on the left rear wheel, providing the stopping power needed. Steer-

(*Continued on page 64*)



A sporting foursome go for a Sunday drive

The driver's pre-race meeting is essential part of event. Neil Barrows lays down the law.

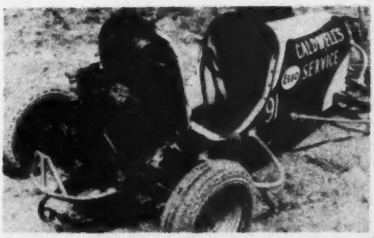


Fuel tanks are sealed prior to the 75-lap feature. No refueling was allowed in pits.

Goo on track caused need for trackside tire modifications. Tread is knifed across.

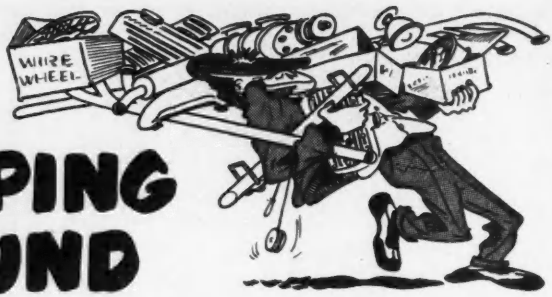
in close, very close, companionship, a fine example of safe, clean, off-the-road activity.

Use of fuel injection on this clean midget resulted in barring from the feature race.



Engine in Julian Caldwell's micro-midget is typical of modifications run in small cars.

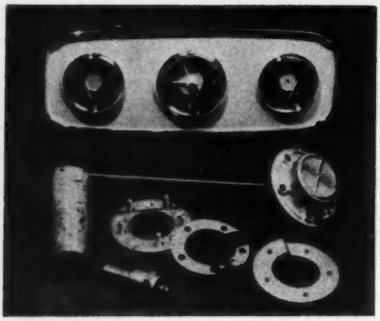
Some rear engined cars can be started with rope as shown, others must be pushed to start.



SHOPPING AROUND

VOLKSWAGEN DASH

THE NEW MoTEST dashboard comprises an electric oil temperature gauge, with warning light, a precision electric clock, and an electric gas level gauge, with a refueling warning light. The instruments are also available separately. The dashboard replaces



the radio grill and can be very easily installed. On those cars already equipped with radios, it is necessary only to transfer the radio speaker to the firewall. The oil temperature feeler bulb replaces the oil drain plug, and the fuel gauge sending unit is specially designed for Volkswagen gas tanks. The MoTest Volkswagen dashboard kit includes all necessary parts and templates for easy installation. For further information write to: A. R. Fisher Products Corp., 21-21 44th Drive, Long Island City 1, New York.

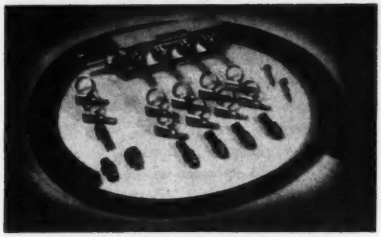
NEOPRENE FAN BELT

AUTO SUPPLY DEALERS and service stations now offer a premium quality, neo-

prene-covered fan belt at no extra cost. Neoprene, the synthetic rubber made by Du Pont, is highly resistant to deterioration by oil, heat, and ozone—all of which are present under the hood. The Neoprene-covered belts are now being made and distributed nationally by the Thermoid Company of Trenton, N.J. Their cover consists of two layers of heavy neoprene impregnated fabric. Their belts, Thermoid says, are precision molded to eliminate ragged edges and they are pre-stretched to assure proper tension for the life of the belt.

FUEL-BLOCK

FOR THE ULTIMATE in fuel systems here is the new Moon Fuel-Block and kit. The kit contributes greatly in the elimination of such problems as capacity, equalization of fuel to each carburetor, vapor-locks caused from heat-conducting copper tubing, and overall cluttered-up fuel systems. With ⅜ inch flexible neoprene hose for fuel-lines, the kit allows individual removal of carburetors for minor repairs and jet



changes. The Moon fuel-block employs a large cast-in chamber for better equalization of fuel flow and larger capacity. Blocks are cast of aluminum and brass, the latter being for the "Special-fuel" user and boat owner. Kits come complete including special fittings for various types of fuel pumps, an ample amount of red neoprene hose, aircraft type fittings and hose clamps. Prices are as follows:

Kit for 2 carbs $10.00
Kit for 3 carbs $11.00
Kit for 4 carbs $12.00

Note: For Brass fuel-block add $3.00 to price of kit. For Brass, chrome-plated add $5.00.—Write: 10935 So. Bloomfield Ave., Norwalk, California. Phone: OXford 64219.

LETTERS

(*Continued from page 7*)

SMOOTH OLDS

Dear Sirs:

Congratulations on the finest automotive magazine in the U.S.

In the November issue, I thought the article "Grab Bag" was one of the best I have seen.

Enclosed is a photo of my Olds, which I would love to see in your magazine. It's lowered in front and rear. Custom interior

and partly chromed dash. Many of my friends have told me it's just about right, not too radical. I love cars that are clean and good looking, which is what I have attempted to do.

Thank you,
Dale Crase
Stockton, Calif.

RODDER'S LAMENT

Dear Sirs:

Up here in Quebec, Canada, we think that CAR CRAFT is far and away the best car magazine on the market. Though there isn't much roddin' here, at least we can drool over the terrific machinery you boys put together out there on the west coast.

Hot rodding has never progressed to a very great extent up here due to the lack of speed shops, and the high cost of speed equipment. And don't forget that hot rodder's curse, the "jalopy jockey." We have far too many of them up here. They roar around without hood, muffler or brains. What kills me is that older people continually associate the word "hot rod" with these nuts. I guess a lot of you have had that same trouble at some time and I'd be very grateful for some advice on how to lick this problem.

In fact, I'd like advice and help on a few more things such as how to start a club, who to approach for a drag strip, etc. I guess you could sum it up into a request for info on how to spread hot rodding around up here.

I have a stock '34 Ford three window and a 1940 Mercury club coupe with a '48 Merc engine. About the only work done on either is body work because of the lack of speed equipment mentioned above. This is where CAR CRAFT comes in handy. It sure is a great magazine.

Sincerely,
Jim Lafoley
Montreal, Canada

Your request for Club information has been turned over to the National Hot Rod Association. They can undoubtedly help you.—ED.

STOVE BOLT STEP

Dear Sirs:

I thought I'd drop you a few lines to tell you how much I enjoyed your article on

(*Continued on page 66*)

HERE'S HOW

(*Continued from page 44*)

rough grinding was done with a stone mounted on a flexible shaft, after which more accurate finish grinding was done with a utility grinder and small arbor-mounted stones.

Care was used to prevent cutting down too close to the ring travel area and to grind the same amount for each cylinder. The relief was made to slope slightly toward the cylinder and was made comparatively shallow since every particle that is ground away reduces the compression ratio. After grinding, the area was polished with small sanding drums.

After relieving, the ports were smoothed out, using small stones and a utility grinder and polished with sanding drums. Not much metal was removed from the ports other than to smooth them up. However, the intake ports were given a slight taper, growing progressively larger as they approach the valve seat and the inside of the seat was ground away using a 70° grinding stone on a valve seat grinder, so that the intake valve would seat farther out closer to the periphery of the valve. (For further details, refer to CCM, Oct. '54—Porting For Power.) After tuning up the seats with a 45° stone, a 20° stone was used to give the intake valves about 1/32 inch margin at the outside and by grinding with a 70° stone, the intake valve seats were reduced to approximately 3/64 inch in width. The exhaust valve seats were 1/16 inch wide and were given a wider margin at the outside.

Some weight was removed from the valves by grinding the underside of the head up to the valve seat angle. This was to enable the spring to control the valve action and cause it to follow the contour of the cam, especially at high speed, where the inertia of a heavy valve causes it to float unless excessively heavy springs are used.

The valves were lapped lightly to their seats using fine grinding compound. This was to check the accuracy of the seat grinding and valve facing operations and to insure a positive seal.

A piece of thin white cardboard was placed on the block in place of the intake manifold gasket. By pressing lightly with a finger, the outline of the ports was located and drawn on the cardboard with a pencil. The mating surface of the intake manifold was then coated with prussian blue and the manifold placed on the engine. By comparing the outline of the manifold ports shown by the prussian blue with the outline of the ports in the block drawn with pencil, it could be seen where grinding was necessary in order to cause the ports to match properly.

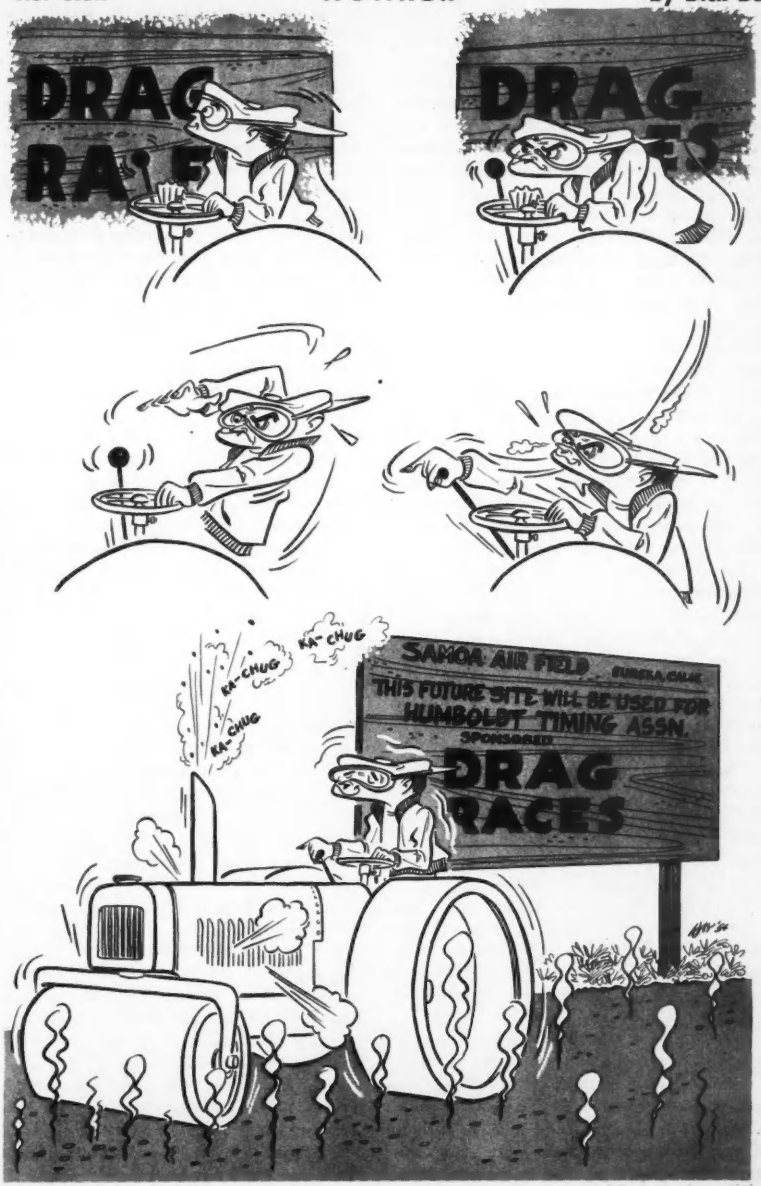
A utility grinder with sanding drums was used to smooth up the passages in the manifold as far as they could be reached. (See Fig. 2.) Some intake manifolds were made of aluminum and some were cast iron. An aluminum manifold was used in order to reduce the weight of the engine.

Since a stock intake manifold gasket would not match the altered ports properly, a new gasket was made from sheet asbestos gasket material. (See Fig. 3.) This was accomplished by placing the gasket material on the block and carefully tapping out the holes with a small ball peen hammer.

The exhaust passages at the ends of the block are given a sharp turn just before they leave the block. The purpose of this turn was probably to direct the gases toward the center of the cast iron manifold where the outlet was located. However, sharp bends offer considerable resistance to the flow of gases and since headers were to be used in place of the manifold, it was decided to straighten out the passage. To do this, a number of small holes were drilled in the block and the metal removed. After which the opening was smoothed up with a chisel and then by grinding. (See Fig. 4.) Pieces of 1¼-inch pipe were cut and sawed in half and welded in place as shown in Fig. 5. This was to eliminate the pocket in the passage which might cause turbulence in the exhaust gases and thus impede their flow.

The volume of the combustion chambers was reduced by filling in part of the space with cast iron by arc welding. The heads were preheated and short beads were run using a nickle alloy rod. Each bead was peened lightly after it was deposited and allowed to cool to the temperature of the head before more was added. After welding, the heads were packed in a thick layer of

(*Continued on page 62*)


DRAG
DRAG
KA-CHUG
KA-CHUG
SAMOA AIR FIELD
EUREKA, CALIF.
THIS FUTURE SITE WILL BE USED FOR
HUMBOLDT TIMING ASSN.
SPONSORED
DRAG
RACES

HERE'S HOW

(*Continued from page 60*)

hot wood ashes until cool. The deposited metal was then ground smooth using a utility grinder and small round stones, being careful to make each combustion chamber the same size and shape. (See Fig. 6.)

The gasket surface of the heads was then coated with valve grinding compound and they were lapped together by sliding them back and forth, occasionally lifting one head and turning it around. When the head surfaces were nearly true, they were lapped on the block in the same manner until the surfaces of the heads and the block were absolutely true. (See Fig. 7.)

Since the cylinders were not rebored, the glaze was removed with sandpaper. This was to enable the rings to seat more quickly.

After all grinding and lapping operations were completed, all grit and grinding compound was removed from the engine by washing with soap and water. Soap and water has less tendency to carry abrasive material into the pores of the metal than does kerosene or other similar cleaning agents.

The crankshaft was miked and found to be within permissable tolerances. The main bearings showed no signs of deterioration. They were miked (See Fig. 9) and found to have only a negligible amount of wear. Since these bearings were already broken in, they were considered more satisfactory than new ones and the slight additional clearance is desirable in a racing engine.

The stock four-ring pistons will be used until such a time as the engine is rebored. The lower oil ring was not used and no expander was used under the remaining oil ring. This was to reduce friction and keep more oil on the cylinder walls.

A further increase in compression ratio was obtained by using thin, solid copper head gaskets. Before final installation of the heads, the clearance over the pistons and valves was checked with strips of modeling clay. (See Fig. 10.)

Cylinder head nuts were tightened, a little at a time, working from the center outward.

As an aid to more efficient cooling, the thermostats were removed and in their place a washer designed for ⅝-inch bolts was used at the top of the water outlet from the heads. (See Fig. 11.) The purpose of these washers is to slow down the flow of water and to enable the pumps to maintain a slight pressure in the block and head, thus preventing air pockets which cause hot spots.

Since the generator is a very heavy item, it was decided to run without it. Accordingly all but the mounting bracket with its bearings, the pulley and that piece of the armature shaft that extends through the bearings and holds the pulley was retained to serve as a belt tightener. The weight of the mounting bracket was reduced by cutting away excess metal where possible and drilling a number of holes. (See Fig. 12.) The weight of the pulley was reduced by cutting away excess metal.

When a car is moving forward at speeds above 30 mph, sufficient air is forced through the radiator for efficient cooling. Therefore, a fan is an unnecessary item on a racing car. Considerable power is required to turn the fan and, therefore, by removing the fan, some power was saved and the weight of the fan was eliminated.

Extra springs taken from an old set of breaker points were installed under the breaker point springs to increase their tension and cause the motion of the movable points to conform to the contour of the cam at high speeds. (See Fig. 13.) This extra tension will cause the fiber rubbing blocks to wear rapidly and frequent point clearance adjustments will be necessary. In order to decrease the time the primary circuit is open and increase the time for primary current build up, the point clearance was reduced from the recommended .015 to .012-inch.

Since the exhaust passages at the ends of the block had been altered, there was no alternative other than using home-made headers. The headers were constructed from tube turns salvaged from gas tank filler necks and some scraps of exhaust pipe which were still in good condition. (See Fig. 14.) The headers were made after the engine was installed in the car. The various pieces comprising the headers were tack welded in place on the engine and then the headers were removed for final welding.

A high pressure oil pump made from parts of two stock Ford oil pumps was used to insure adequate oil pressure at all times. (*For details on the construction of this pump, see pages 14-19, this issue.—Ed.*)

YOU GOTTA BE HUNGRY!

(Continued from page 10)

ing to make up for lost time, Johnny drove like a ghost from the past, beating his own qualifying time for lap after lap but 15 minutes is 15 minutes. Eli Vukovich, brother of the Iron Man of Indianapolis took over but his Offy gave up and the lead was grabbed by Jack Gardner in his T-Merc. Gardner held on despite the loss of his complete turtle deck and tail fuel tank, running on the floor tanks, until the 41st lap when he had to make a fuel stop.

Jay Abney, driving a Ford Six flat-head sprint car that practically owns the New Mexico-Arizona circuits, only seconds behind Gardner, grabbed the lead even though Gardner's crew had him out in less than a quarter of a minute.

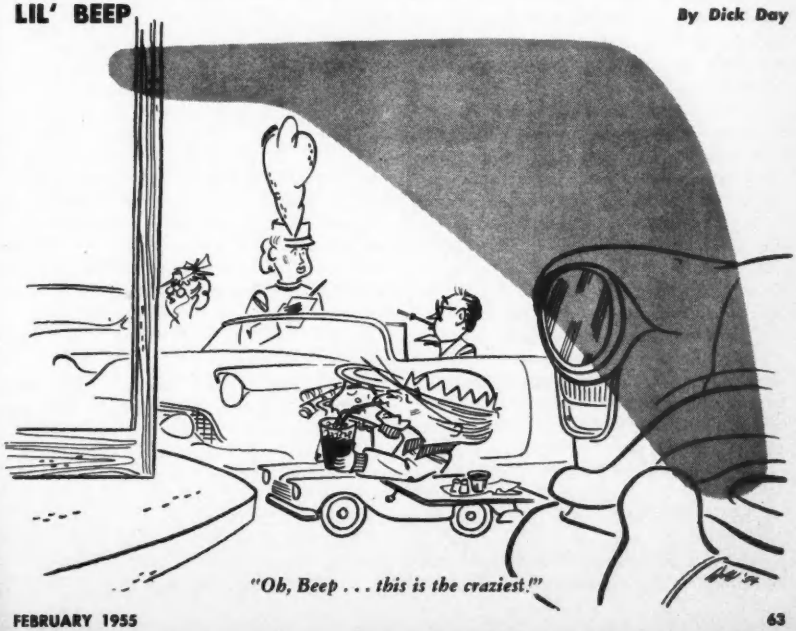
Closely following Abney was Scotty Caine, a top jalopy jockey, in an unchanneled '32 roadster. Caine had played it close to the vest and hadn't made a single pit stop during the entire race. Driving steadily and using his gearbox to advantage, he had worked his way unspectacularly up through the ranks of the out-and-out racing machinery to a spot only seconds behind Abney. Unnoticed, Caine also flew by Gardner's pitted car to snatch second spot when the flag fell.

The combination of early darkness and dust called a halt to the race on the 45th lap instead of the scheduled 50, so Gardner didn't have a prayer of a chance of catching up although he was only some five seconds behind.

If the race proved anything it was that a race driver is a race driver whether he's on a short oval, a dirt road course or a goat path. Further, these guys are adaptable. If you listened closely, after the race, you could hear guarded remarks about such things as pre-select gearboxes, wheel travel, limited slip rear ends and other items completely foreign to dirt track racing. It just could be that this was the start of something that could shake road racing to the core.

Though the course was not ready for racing and was just a shade rough on equipment, somewhat too dusty for safety and spectators, this, gentlemen, was road racing the way road racing should be—rough, hungry and fast. More, please, more!

LIL' BEEP **By Dick Day**



"Oh, Beep . . . this is the craziest!"

TEMPEST ON A MUD PIE

(*Continued from page 56*)

ing set ups are of standard design and practice and most always adaptations of factory components.

Not only are the cars themselves inexpensive, the tracks they race on are in the same category. The Leesburg, Florida, club built their clay track which is fully banked on the turns for a total outlay of around $800. This is for an oval with the regulation ⅛th mile length and with a width approaching 15 feet. The local Amoco dealer supplied 120 gallons of Amoco gasoline which was sufficient to run the entire day's program of racing. This 120 gallons was for 200 laps of racing involving from 10 to 24 cars per event. In the 75-lap feature event the 24-car starting field was the largest lineup ever to make a go on a micro midget track at one time.

These little demons are capable of roaring down the track at speeds up to 70 mph with the proper gearing and they power slide thru the turns just like their larger brothers. Center of gravity is so low that it is virtually impossible to turn one over, except in case of collision or other type accident. They often do run up over the back ends of one another, though, which provides many of the thrills the public likes. Naturally roll bars are a necessity and cars are not permitted to race without them. Well-padded cockpits especially for the back and bottom are also very desirable since the shock of collisions from the micros can really shake a fellow up.

The Southeastern States Championship races were run at the Leesburg Micro Midget oval on September 5th, 1954. This was the first regional event ever held anywhere. Drivers and cars were entered from Florida, North and South Carolina, Mississippi, and from as distant as New York. For some reason or other the Carolinas seem to spawn more race drivers than any other area considering the population. Neil Barrows, president of the Leesburg Club, decided only three days before the race that he wanted a new car to enter but had not even started construction. At race day, however, he did turn up with a completely new, but unfinished job. The body shell covering was still to be applied but this did not prevent Neil from touring the course with the checkered flag in the third heat and then going on to nail down 4th position in the 75-lap feature go. Best time trial speed of the day was achieved by Bob Herschi of Ocala, Florida, piloting his #06 to a quite snappy 16.7 seconds average for the ⅛th mile. This figures pretty close to 27 mph on a very slick and sticky track.

After sweating out intermittent rain squalls which proceeded to soak the already flooded course, the 75-lap feature event got underway 45 minutes behind schedule under still threatening, leaden skies. Pole and succeeding positions were posted according to best speeds during the time trials. Charles Quinn of Miami, Florida, pulled number one slot against the rail after three of the highest qualifiers were scratched due to being unable to start the engines. By the time all 24 starters were lined up, the cars were extended clear back into number four turn. As Chief Starter George Baxter dropped his green flag the cars banged away to a pace lap behind the pace car carrying the Micro Midget Queen. The first lap or two saw many cars retire due to the large number of cars clogging the track and causing collisions. As the laps wore by, the superior cars and drivers began to extend their leads and started to lap the trailing machines.

The eventual winner who was to become the Southeastern Regional Champion was Bill Hughes of Leesburg who had started in position 17. Biding his time while the track cleared of cars Hughes slowly threaded his way through the pack and began inching up on the leaders. Car #63 piloted by Bill Burton was holding the lead on the 20th lap with Hughes now up into 6th position with little over half the original starters still in action. The 40th lap saw Burton's potent #63 still holding to 1st but Hughes had cut into his lead and had swung clear into 2nd by now. This car of Hughes', #00, is a companion car to #000 which Neil Barrows piloted to 4th spot in the feature. By this time the remaining drivers had the track well figured and were rounding the course without incident except for minor pile-ups while running in packs through the still slick turns.

Some still attempted to gain a little and skidded out or would lose control and slide into the infield. Clyde Nesselrotte again driv-

(*Continued on page 66*)

SUPERCHARGED MULE

(Continued from page 23)

The compression drop was for good reason. By this time Vic had managed to latch onto a 3-51 GMC Diesel supercharger. This formidable piece of machinery was adapted to take a Carter carburetor designed for the Chevrolet Corvette. A sheet steel and tubing manifold was made to adapt the blower to the Jeep block. A split exhaust manifold was also built to replace the stock system he had used until this time. One-third of the weight of the iron flywheel was milled off and adapted to take an Auburn clutch that was beefed up to be even stronger than the original unit. A fixed advance Wico magneto was installed in place of the battery igniter. Since the stroker pistons were a shade long, Vic left the top compression ring off in order to clear the gasket and not burn the ring. Despite pumping eight pounds of boost, Vic says, he has no trouble with this set-up. Blower speed is one and one-half times engine speed.

Only one problem presented itself during the conversion. This was the matter of gaining bottom pulley clearance between the engine and the front wheel drive unit. The problem was simply solved by redrilling the center bolt holes in both front springs and moving the axle only, not the spring, forward exactly the distance which the center bolts were moved. The only change this necessitated was in adding the extra inch-and-a-half to the front drive shaft as shown in the photograph.

Hickey claims a full 90 horsepower at the rear wheels in two-wheel drive and high transfer. There's no way of telling, unless someone builds a four-wheel-drive chassis dynamometer, just what is being pumped through in full drive and low transfer. Whatever it is, it's enough to send this former Army mule off the line like a dragster. It's also enough to take Vic just about any place he dares to go. But is this the ultimate? We've known Vic and his Jeep for more than two years, now, and each time he surprises us. We won't even venture to predict what he'll do next, it's too risky and it's been tried before without success. Not only that, but all seven of Hickey's crew in the shop cooperate on these projects. Who knows what seven guys will come up with?

TEMPEST ON A MUD PIE

(*Continued from page 64*)

ing his championship car with his leg in a cast lost control of his car coming out of number 2 turn at speed and tore off towards the bleachers on the backstretch, scattering spectators who had already become accustomed to dodging careening runaways. Only one entrant was unable to finish on account of driver injury. Bill Harrell of Spindale, North Carolina, was coming into turn 4, slowing down to prevent a pile up when he was smacked from the rear spinning him around on the clay and onto the infield. The shock of the collision was so great that Harrell had to be lifted bodily from his cockpit and laid upon the turf until he recovered. He was uninjured but was unable to continue the race. His co-pilot then hopped into the car after restarting it and raced off but only after a 6-lap loss in standing.

At the finish it was Bill Hughes in #00 first across the finish line closely followed by Bill Burton's #63, Howard Getford of Ocala, Florida in #71, Neil Barrows' #000 in 4th, Charles Allen also of Leesburg took 5th in #333 and the only out of state driver to place in the first six, Julian Caldwell of Spartanburg, South Carolina, spotting his #91 in 6th place.

Here is a digest of Micro Midget rules of the Leesburg Club. (A complete set of rules and other helpful information can be obtained from Myrtle Baxter, Secy., Leesburg Micro Midget Club, 706 South 14th St., Leesburg, Florida.)

Wheel tread . . . 42 to 48 inches
Wheelbase . . . 60 to 80 inches
Engines . . . One-cylinder American made only
Flathead . . . 18 cu. in.
OHV . . . 15 cu. in.
OHC . . . 11 cu. in.
2-cycle . . . 7.5 cu. in.
Tires . . . 600 x 6 max.
Frames . . . Soundly welded construction
Roll Bars . . . Minimum of 3 inches over driver's head.
Front Bumper . . . Built to clear roll bar of other cars in event of running up over from behind.
Safety Belt . . . Securely fastened to frame
Helmets . . . Any approved type
Cut-off switch . . . Mounted so as to be reached quickly
Fuel . . . No limitation
Weight . . . No maximum or minimum

LETTERS

(*Continued from page 59*)

stepping a Chevrolet frame in the October issue of CCM. The article interested me very much as I am a Chevrolet man from way back. Being way over here in Korea has kind of slowed down my automobile activities, but I am sure looking forward to the time when I can resume my interests once more. Magazines such as yours really are a big help to amateur enthusiasts like me. The instructions are the best to be found anywhere. Keep up the fine work.

Yours truly,
Pfc. James Kenfield
Korea

COUPE D'ELEGANCE

Dear Sirs:

Keep up the great work on an equally great magazine. CAR CRAFT is great on inexpensive ideas for guys with little greenstuff.

I am in the Army, but am still working over cars. I bought a '40 Ford a few months ago, for, believe it or not, $95.00 with a darn good body except for one rear fender.

I am mainly working on the exterior and upholstery; and when it begins to look good in these two respects then the engine will get much attention. All I have done to it is to completely rebuild it stock for economical reasons.

So far as the rest of the car is concerned I am just straightening out some of the mistakes of the former owner such as replacing the coil springs in front with a stocker.

Of course I have the So-Cal drop in front with 760 x 16 rear rubber and electric doors and just enough chrome removed, mainly the deck lid, to make a sensible looking coupe.

The upholstery will be a white leatherette, smooth or rolled (????). The outside will be Alpine white ('54 Chev.). Sorry, no picture, haven't got one.

Keep up the good work. I really appreciate your honest interest in our problems.

Sincerely,
Gary Williams
San Diego, Calif.
(Now stationed in Texas)

HELLWIG

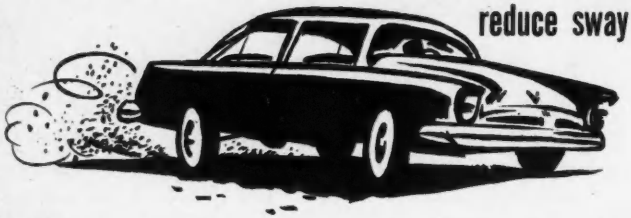
who controls your driving... you or the road?

Many unfortunate drivers of new as well as used cars are plagued by either sagging springs or that supersoft mushiness found in all late model cars. Neither make driving fun, safe or economical.

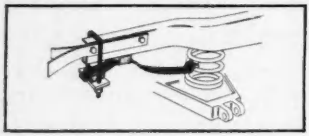
Now, you can be one of the many drivers who have regained that feeling of complete control over the road with the new Hellwig 4-point stabilizers which are adjustable to individual requirements. You will find your tires giving you more mileage and there'll be fewer maintenance bills too!

STOP excessive ROLL!

reduce sway on turns

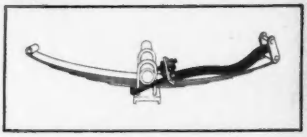


TRUE ride control + added spring support = SAFE DRIVING



FRONT STABILIZER

For use on knee-action front suspensions. Eliminates excessive tire wear due to uncontrolled motion in front end of your car. Greatly reduces sway, pitch and roll on corners.



REAR STABILIZER

For use on cars with leaf-type rear springs. Designed to raise weak, sagged spring back to proper height, preventing bottoming and minimizing body roll and sway on curves.

Hellwig Stabilizers make winter driving safe driving.

Write today for name of dealer nearest you and **FREE** illustrated catalog

HELLWIG PRODUCTS COMPANY, INC.
6231 San Fernando Rd., Glendale 1, Calif.